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PSYCHOTHERAPY

BEING THE SUBSTANCE OF A PAPER ON PSYCHOTHERAPY PRESENTED BEFORE THE MASSACHUSETTS MEDICAL SOCIETY ON JUNE 10, 1925

BY C. MACFIE CAMPBELL, M.D.

PSYCHOTHERAPY has been the topic of very complicated discussions, and the general practicioner may well feel somewhat disheartened when faced with elaborate psychological formulae, the real meaning of which he has some difficulty in grasping. He is in the same position as the non-mathematical reader who, in the course of reading an interesting presentation on some physical, chemical, or psychological topic, suddenly finds progress barred by abstruse mathematical formulae stretched across the page.

In the following remarks I shall confine myself to what I consider to be the general principles of Psychotherapy, which are of very great importance to the general practitioner and to specialists in all branches of medicine. I am afraid the following presentation will appear too simple; my only excuse for such a presentation is that it seems to me to be a true one.

A patient goes to a member of the medical profession to be treated for certain symptoms. The member of the medical profession, after examination and diagnosis, outlines treatment directed towards the symptoms—regime, diet, drugs, appliances, operation, occupation, travel, exposure to sunlight or other forms of light, or to rays of other origin. The patient utilizes the advice given and returns to health. The advice happened to be given by a member of the medical profession, but if correct it would have been as efficacious if discovered in a textbook or extracted from a diagnostic machine or handed in an envelope by the secretary of a medical group or corporation.

The above description does not do justice to the real situation in the consulting room. It deals with it as if a patient, or a disease process inhabiting a patient, were confronted with an impersonal medical machine. The real situation is a man or woman in trouble appealing for help to a man or woman who has had a special training to equip him for being of use in such situations. The real situation, therefore, is the sick man Brown face to face with Smith the physician—or, to obviate any misleading references, let us call the physician McConnachie. In so far as the benefit done to Brown in relieving him of his symptoms comes from McConnachie *listening to* and *talking to* Brown, we are dealing with Psychotherapy.

I am afraid that this appears a very ordinary kind of therapy in comparison with such distinguished competitors as opotherapy, heliotherapy, pharmacotherapy and the technical methods of the surgical specialties. The procedure seems rather commonplace, it looks like the mere application of common sense. The only excuse for it is that it may work wonders. The fact that it is so ordinary is, of course, disappointing to the physician accustomed to dealing with therapies which have a much more technical appearance, and which can be formulated in much more precise terms. The modern physician, having lost sight of the patient, and obsessed with the idea of disease processes, expects to find in his armory a suitable weapon of precision to deal efficiently with each disease process. He would like to have a special drug or serum or operative procedure to meet exactly the disease processes upon which his attention becomes focused. In the past he has found many of these forms of therapy extremely efficient. When he finds himself face to face with nervous disorders, to understand which requires a complete readjustment of his point of view and the abandonment of the narrow laboratory nosological attitude, he is somewhat at a loss. He naturally refers to his armory for the suitable weapon to deal with these baffling symptoms. He has tried pharmacotherapy and opotherapy and surgical therapy and finds that they seem to be of singularly little value for these nervous troubles. He hears Psychotherapy well spoken of and thinks that he will try this new variety of therapy. He intends to try it in exactly the same way as he has tried pharmacotherapy and surgical therapy, that is, as a more or less impersonal technique which he takes hold of and utilizes in order to deal with some morbid process. He finds that there are various brands of Psychotherapy on the market labeled suggestion, persuasion, hypnotism, psychoanalysis; he also finds to his dis-

gust that certain unofficial brands of Psychotherapy are on the market and have a large number of customers—Christian Science, osteopathy, chiropractic, spiritualism, faith healing, etc.

The brand of Psychotherapy which he chooses may be determined by considerations of rather secondary importance. He looks up the technique chosen, whether it be persuasion à la Dubois, or psychoanalysis according to Freud. With a certain trepidation and inner feeling of lack of confidence and some doubt as to the fundamental soundness of the method, he may attempt to employ this peculiarly elusive therapy. He may be surprised to find that, even though a novice in the art, he gets somewhat surprising results. The patient consents to be hypnotized or derives much benefit from a perusasive lecture or is greatly relieved by unburdening all sorts of repressed memories. With such a pleasant experience the physician feels that after all there is something in Psychotherapy. He may, however, have a different experience. The patient seems not interested in hypnotic suggestion, or does not seem to be influenced by moralizing medical reflections of which the physician himself is only half persuaded, or seems to be absolutely free from repressed complexes and shows no tendency to unburden himself. After such an experience the physician is more critical and may consider that Psychotherapy is a very haphazard and unscientific procedure. He does not realize that the psychotherapeutic technique carried out by a physician, who is thinking merely in terms of impersonal disease processes, is a very different thing from Psychotherapy carried out by a physician sensitive to the complexities of human nature and profoundly convinced of the fact that many human ailments are merely the disguised expression of the difficulty which people have in dealing with vital issues in life.

To talk of Psychotherapy when the physician has no grasp of the fundamental problems of human nature is almost a paradox. Psychotherapy means a physician, with a certain point of view and with a certain insight into human nature, trying to help a fellow being in trouble who has come to the physician for technical help.

The Psychotherapeutic treatment of Brown by McConnachie consists in McConnachie *listening* and *talking* to Brown. Is there any special technique in regard to this type of therapy? So long as McConnachie is intelligent and listens long enough to the information which Brown can put before him, and so long as he is able to talk to Brown in a useful and constructive way, details of procedure or technique are of vanishing importance. They are, to a large extent, questions of taste and tradition and authority. One physician may wish to employ the dramatic technique of the hypnotic procedure in order that he may listen to Brown and talk to Brown. Brown may be docile and have no special objections to this little drama, in fact the mild mystery associated with it may somewhat exalt McConnachie in his eyes. Primitive man has always been very sensitive to the magical forces associated with the medicine-man, and the reactions of primitive man still continue beneath the more highly evolved functions of civilized man. It is not surprising, therefore, to find similar manifestations elicited as easily in Boston as in Central Africa or the wilds of Brazil. Even when Brown is not specially influenced by these primitive mechanisms, he may have other reasons for accepting the hypnotic suggestion. It is less embarassing to tell some things with head averted or with eyes closed; it is gratifying to have at the same time the possibility of unburdening and the official fiction that we, ourselves, are not really conscious of the facts we are disclosing. So in diplomacy it is some times useful to communicate some information but at the same time to make a *démenti officiel*. This is in accord with diplomatic tradition and the diplomatist retains his self-respect. So it is the traditon of the hypnotic technique and the patient maintains his self-respect.

That this is the actual situation as it appears to the patient in some cases is shown by the statement of a patient of Kretschmer; very sensitive, deeply distressed over the problems of the sexual life, she prayed to God that He would let her be hypnotized in order that she might tell the physician what, under ordinary conditions, she could not bring over her lips.

A patient who wishes the physician to know certain facts may not have the courage to tell him directly and may hand in a written confession. Occasionally patients ask a nurse or other intermediary to tell the physician. They are afraid to lose the respect of the physician, something which already means a good deal to them. Ordinary social habits further tend to make Brown accept the little hypnotic drama if McConnachie seems anxious to play the game; one dislikes to be disobliging to one who is respected or admired or loved. A soldier who had been talking freely in the so-called hypnotic condition to his military medical officer admitted to another neurologist that during the whole interview he had been quite well aware of what was going on. When this fact was disclosed to the military medical officer he soon gave up the dramatic setting and continued equally efficiently his treatment of his patients, while he listened to them and talked to them face to face while they were wide awake and in no mysterious condition.

An orthodox foliower of Freud may prefer to sit behind his patient, who lies stretched out on a couch and with closed eyes talks to the physician about whatever happens to come into his or her mind; here, too, the patient has the opportunity to talk with averted face, and it may be more pleasant for the physician not to

have the patient scrutinizing his face for an hour continuously. This setting too may give both to the patient and to the physician a diluted magical feeling which heightens the prestige of the physician.

The essential fact about the situation is that Brown, whether in the hypnotic or psychoanalytic setting or sitting with eyes wide open on any convenient chair, is talking seriously and earnestly about vital issues to McConnachie, who is equally seated on some indifferent article of furniture, but who is profoundly convinced of the important rôle played in many ailments by the complications of human nature and the difficulties of adjustment to a modern cultural environment.

The general practitioner, hearing that the hypnotic and psychoanalytic technique are more or less irrelevant, may feel considerably elated in view of the fact that Psychotherapy merely consists in McConnachie listening to and talking to Brown; for him it may seem very simple. He must realize, however, that this situation of Brown and McConnachie together is an extraordinarily complex one, and that the issue of the psychotherapeutic relationship is going to depend upon the personality of McConnachie and upon the personality of Brown and upon the life issues in which Brown finds himself involved. Brown may be an ignorant artisan or he may be an erudite scholar. He may be very receptive of suggestions made or he may be very tenacious of his own views and prejudices. He may be dominated by the appetites or he may be keenly responsive to the finer issues of life. He may be egoistic or he may feel a definite personal responsibility for playing his rôle in relation to a cultural environment, towards the maintenance of whose standards each one of us must do his bit.

Brown may have an absolutely different scheme of values in life from McConnachie, in regard to standards of personal behavior, in regard to his relationship to members of his family and to the community in general; he may have a different attitude towards religion, towards sex standards, towards social and legal restrictions.

McConnachie, too, is a real man—no medical machine. He has the likes and dislikes, the prejudices, convictions, enthusiasms that go with human nature. He may be radical or conservative, heterodox or orthodox, matter-of-fact or imaginative, rigid and unbending or willing to listen to compromise. He may have strict standards as to sex relations or he may be extremely tolerant. With regard to religion and the spiritual values of life, he may treat them with kindly indifference or may consider them as the factors which give life its savor.

It obviously may take quite a difference to Brown what sort of fellow McConnachie is. A timid Brown, unduly secretive about past peccadilloes, comes for help to McConnachie, a robust Christian of unbending standards. The latter may put at Brown's disposal a good deal of correct medical information, but the severity of his views may chill poor Brown, may make it impossible for him to unburden, and make him feel even more of a worm than before. Or Brown may be rather loose living, but still have found himself in need of medical help, for those who indulge the appetites are by no means immune from nervous symptoms. McConnachie may again supply sound medical information, but if he ignore the finer values of life and if there do not radiate from him some influence in the right direction, Brown may fail to get that very stimulus to his higher nature which might restore the desirable equilibrium.

Brown may partly owe his nervousness to resentment at an over-dominant father, and if, in McConnachie, he meet again the same paternal or magisterial attitude he may be quite unable to accept the help which McConnachie offers. On the other hand, if he have been unduly dependent upon an over-solicitous parent he may become much attached to McConnachie, who likes to play the authority and who does not see that he is fostering an attitude in Brown which it should be his first duty to check.

Some further remarks may be made with regard to the actual procedure involved in the psychotherapeutic treatment of Brown by McConnachie. McConnachie has to listen to Brown's story, he may even ask for further details than Brown spontaneously brings up. The story is apt to become long, it involves all sorts of detailed incidents in the past, it draws in the personalities of the family circle, it wanders into an account of a complicated inner life of strivings, regrets and phantasies; frequently isolated and apparently irrelevant recollections or associations thrust themselves into the narrative, coming from some mysterious source. The one very important point of the technique is to let Brown tell his story his own way, spontaneously, fully, with irrelevant interjections, with sudden changes of direction, with hesitations and corrections. The spontaneous account of the problem and of the past life and the inner experiences is an essential part of the psychotherapeutic procedure.

McConnachie does not merely register this account in a mechanical way, but is thinking about what it all means. He notices what is spontaneously brought up, his attention is caught by a sudden check in the narrative with an abrupt change of direction, by a slight hesitation, a stammer, a flush, an uneasy change of position, casual movements on the part of Brown, attention to the neatness of his attire. All these data are problems in dynamic psychology and McConnachie is interested and curious.

An hour has passed and the whole situation is still very obscure, even two hours may have passed and the time of McConnachie is not un-

limited, unless this is his first and only patient. What is he to do? If he is going to help Brown to straighten out the issues of his life and help him to get an equilibrium which will make neurotic symptoms superflous, he has got to understand the whole story, all the forces at work, all the difficulties in the situation, all the undigested residuals of past experiences. One interview evidently does not suffice. It may be only after a long series of interviews that the situation becomes clearer, the tangle unraveled and the tension relieved.

Psychotherapy takes time, it takes a lot of time. One frequently hears a busy internist remark that he tried Psychotherapy in a case but got no results. One some times wonders how much time he spent in listening to the patient.

Even when one has treated a patient therapeutically for a colleague who is an internist, it is difficult to get the internist to listen to a full analysis of the case. He is accustomed to get from his colleagues a statement of the mechanism of disorders referred to them in brief and precise formulae. He finds difficulty in maintaining his interest when his psychiatric colleague tries to put before him the exact steps in the development of the symptoms in the patient whom both of them have seen. Perhaps the psychiatrist is rather tedious and long-winded, but is it unreasonable to require more time to formulate the intricacies of human behavior dealing with the complex demands of a cultural environment, than to formulate the difficulties which the pancreas has in dealing with some simple chemical combination, or the lungs in dealing with tubercle bacillus?

The first and foremost requirement in Psychotherapy, therefore, may be considered to be time, and no physician will give so much time to the individual case unless he has an interest in these human problems. It is probable, too, that the patient will not be able to pay a fee that is at all porportionate to the time given, so that if the physician's outlook is that of the shop-keeper, he may find that he cannot profitably indulge in Psychotherapy.

The time factor is such a complication that one would be glad of any means of economizing time. It may be possible to refer the patient to books, which deal with certain topics and make him familiar with a certain point of view, or which give him certain required information, but this impersonal method of procedure has strict limits. It may take less time to give the patient what one considers the correct point of view, than to correct the impression made on the patient by some book he has read. Technical books on Psychotherapy are liable to be one-sided, they assume familiarity with clinical material and a certain habit of critical judgment, and without these they are apt to be of little help to the patient.

It would be a great gain if one could treat patients in groups. In one case a group of ward patients made an appeal for such assistance to the physician. In so far as the physician is giving information, correcting false impressions, stimulating hope and courage, formulating a point of view, he may treat certain types of patients in groups, the individual patient extracting from the talk, as from the sermon of the preacher, that message which is specially required by him. The great gain to the patient, however, comes not from what the physician says to the patient but from what the patient says to the physician, and it is obvious that for a frank, unembarrassed review the patient must be alone with the physician.

Psychotherapy takes time, and it takes much time in some cases, but it is important to realize that if McConnachie be deeply interested in these issues, if he have a wide experience, if Brown have confidence in him, the time may be very considerably curtailed and a frank and open atmosphere established with great rapidity. It would be unfortunate if Psychotherapy were to be looked upon as invariably and inevitably involving an enormous amount of time, and were only to be available for those able to pay proportionately for this time.

In the somewhat hurried atmosphere of an Out-Patient Department a physician with good grasp of psychotherapeutic principles may be of very great help to patients, where only a limited amount of time is available for the individual case. In the Out-Patient Department of the Boston Psychopathic Hospital it is found possible to help many patients by means of Psychotherapy, and Dr. Peck, in a recent article, has done justice to this situation.*

To return to the concrete situation of Brown and McConnachie devoting themselves in a series of interviews to the problems of the former, it may seem that an undue amount of time is allowed to the analysis or diagnosis of Brown's problems. It may seem unreasonable to allow Brown to go on talking, interview after interview, about his feelings, his memories, his dreams, his inhibitions, his primitive cravings. Brown himself may ask McConnachie "when is the treatment going to begin?" The treatment has already begun when Brown, under the influence of McConnachie, begins to pour out his story. As a matter of fact he may, from the very first, experience a sense of great relief; he may, in the course of the second or third interview, tell of a certain improvement in his condition, of fears modified, of work accomplished, of sleep attained or other progress made, perhaps even to his own surprise for he was still waiting for treatment to begin. The treatment has begun as soon as Brown has taken the first step in exposing his personal difficulties. This active step taken by Brown is a mental exercise of the greatest importance, the continuation of

*Psychotherapy as a Practical Measure in Out-Patient Work. Martin W. Peck. Boston Medical and Surgical Journal, Vol. 192, No. 24, pp. 1151-1157, June 11, 1925.

which is going to contribute, in large part, to the re-establishment of his equilibrium.

If Brown has begun his share in the treatment with the first step of the examination, McConnachie likewise has taken part in it. Brown has been able to make the effort to talk because he has found McConnachie willing to make the effort to listen, and the atmosphere of McConnachie's consulting room, the personal influence which he exerts upon Brown, make it possible for him to carry out the necesary review of his problems, the resurrection of past experiences, the frank facing of difficulties hitherto evaded. In taking seriously Brown's problems and enabling Brown to scrutinize and discuss his troubles in an atmosphere which is not complicated by the ethical and social values of the drawing room and the market place, McConnachie offers to Brown a therapeutic condition as essential for his recovery as fresh air and sunlight for the recovery of the tubercular.

McConnachie does not remain altogether passive in the situation; he encourages Brown to go forward when Brown hesitates and obviously evades a painful issue; he puts at the disposal of Brown biological information, in the light of which some of Brown's memories lose a great deal of their disturbing force; he encourages, explains and illustrates. Brown hesitates to talk so much of himself; will it not make him introspective? McConnachie explains that introspection may be used for an unwise or a wise purpose. It is unwise to be continually taking a watch or an automobile to pieces just because one is preoccupied with its machinery and has no wider interests. It may be very wise to take an automobile to pieces if some difficulty should have developed, and if the individual wish to be sure that he use the machine to the best purpose and that he be not left stranded in the middle of important undertakings. In over-hauling the automobile one has to go below what is shining and elegant to the driving forces, the examination of which may be distasteful and cover the hands with grease. When the job is done one does not leave the crude machinery exposed, one can still maintain enough pleasure in the beautiful and in what is socially fitting to cover up the inner works and restore the machine to its normal elegance.

So, in over-hauling the psychological machinery one may have to dive below to deal with crude forces, contact with which is somewhat distasteful to us, but having done what is necessary to adjust the machinery one shows a reasonable compliance with the demands of convention. If one wish to have a healthy house it is well to realize frankly that such things as plumbing and a cellar may occasionally require attention. Or McConnachie may vary the simile and remind Brown that we do not treat dirty linen by locking it in a dark cupboard but by putting it out in the sunshine. It is true that we do not bleach our linen on the front lawn; the consultation room may represent the back yard. He may remind Brown that Pompeii owes its preservation largely to the fact that it has been lying covered up for hundreds of years and that now exposed to the weather it will require to be carefully preserved. So with the early experiences and attitudes and emotional values of childhood, so long as they are absolutely covered up by formulae of thought and modes of behavior inculcated by conventional education, they may persist indefinitely, liable to give rise to symptoms above the surface which perplex the individual. Once brought into the light of free discussion and honest information, the angular memory fragments of painful experiences begin to weather and blend with the landscape.

The success of Psychotherapy will depend upon many factors, the discussion of which would take us very far afield. It depends upon the personality of Brown, it depends upon the type and the duration of the disorder which handicaps Brown, it depends upon the life situation before which he finds himself, it depends upon what sort of fellow McConnachie is.

One practical point may be referred to. McConnachie may feel uncertain as to how much of the handicap of Brown is due to some physical disorder and may wish the opinion of an internist or surgical specialist with regard to this point. The specialist thus appealed to is more likely than not to have little interest in the psychotherapeutic situation, although he may be polite enough to cover up his real attitude towards it. He may not explicitly say that the condition of the tonsils and of a molar tooth with a slight hyperacidity and some visceroptosis and mild flat foot are probably the explanation of all Brown's difficulty, but that impression may radiate out from him and be eagerly welcomed by that craven part of Brown, which still would like to evade the main issues of life and which has not fully taken its stand on the side of complete honesty. It is difficult to carry on Psychotherapy while at the same time the patient is under the influence of another physician, whose special interest leads to emphasis on all deviations from the normal in the simple bodily functions. The situation may be dealt with in various ways. It is wise to let one's colleague know exactly what the situation is so that the latter will not unwittingly influence the patient in an undesirable direction. Some times it is better to put off Psychotherapy until after the simpler functions have the necessary attention. The main thing is to be aware of this complication and to deal with it in a common sense and tactful way.

Another complication less easy to meet is the influence of other members of the family with whom the patient may be living in daily contact. It is much easier to help the patient by Psychotherapy if the patient be away from home and from the disturbing associations which frequently are closely interwoven with the symp-

toms of the patient. Frequently practical considerations make it impossible for the patient to leave his ordinary environment and then the physician has to consider how best he can neutralize or dilute any undesirable influences which exist in the home. Not infrequently it is necessary to pass beyond the treatment of the individual and to treat the situation. Often it is advisable to suggest to the husband or wife, to the parent or child, of the patient that some analysis of their own difficulties will help to create a healthier atmosphere and perhaps be an essential condition of the restoration of the patient to health.

The above presentation of Psychotherapy is not meant to cover an analysis of the mechanisms of the disorders in which Psychotherapy is useful; nor does it offer a subtle analysis of all the psychological or physiological mechanisms which are thrown into play when McConnachie meets Brown or which have been in play in building up the personality of Brown.

In regard to each mode of therapeutic procedure there is apt to be considerable difference of opinion as to its specific explanation and practical value. It would take us far afield to discuss the detailed phenomena that come to pass when McConnachie, interested in hypnotism, utilizes this procedure and gets Brown to fall in with the technique. The analysis of this situation would involve a discussion of types of personality and of many topics such as the relation of emotion to fatigue, to vasomotor and postural conditions; it would also require some reference to the behaviour of primitive man in analogous situations.

So in regard to the psychoanalytic mode of procedure and body of doctrines many questions at once arise. A detailed presentation of these doctrines and a critical estimation of them would be quite beyond the scope of this paper. What is more it would do much to obscure the main point of the paper, which is that McConnachie can be of very great use to Brown, even although, with regard to the complicated and some times obscure doctrines of the various psychoanalytic schools, he may feel somewhat ill-informed. Should he read a presentation of any of these special doctrines I should advise him always to keep clearly in mind that the somewhat formal and abstract formulations which he is reading are abstracted from a concrete situation, and to re-translate the abstract formulae into the concrete terms of the individual psychoanalyst, listening, encouraging, explaining, interpreting to the patient before him.

To repeat what has already been said several times in this paper, the essence of Psychotherapy, no matter what the special procedure may be, is that Brown an individual in trouble is getting an honest chance to bring up important problems of his life before McConnachie the physician, who is willing to listen to him, and that McConnachie is honestly endeavoring to pool his special knowledge with Brown's lay experience to see whether poor Brown can, by means of his help, make a better job of his life and get along without his previous evasive reactions, whether the latter consist of physical symptoms, special fears, domestic friction, economic inefficiency or social eccentricities.

ORIGINAL ARTICLES

THE FREQUENCY OF BILATERAL RENAL TUBERCULOSIS*

BY J. DELLINGER BARNEY, M.D., F.A.C.S., AND STEPHEN G. JONES, M.D., BOSTON, MASS.

From the Urological Department, Massachusetts General Hospital

THE frequency of bilateral renal tuberculosis, existing when the patient first presents himself, has been attested to by all writers. Peacock[1] reports it in 60%, Kapsammer[2] in 64.9%, Wildbolz[3] in 10%, and in our own group of 100 cases to be dealt with later, it was found in 24%. Waldschmidt[4] found it at autopsy in 70.6% of 119 cases of renal tuberculosis.

With these impressive figures in mind, and realizing the difficulties often met with in the diagnosis of renal tuberculosis, we cannot but feel that in cases of so-called unilateral infection the apparently healthy kidney may also be tuberculous more often than is realized. While cystoscopic examination of the bladder will generally show changes in the mucosa, especially around the ureter of the affected side, which one is in the habit of calling "characteristic" of tuberculosis, it is also generally acknowledged that these changes may sometimes be absent, extremely slight, or of an entirely uncharacteristic nature. The silence of renal tuberculosis, with regard to symptoms referable to the kidney, has been the subject of numerous communications. The absence of bladder symptoms or their mild character has also been touched upon by many writers. Roentgenograms and pyelograms are often either negative or misleading, unless perhaps in the more advanced cases. While the urine from a tuberculous kidney generally contains pus in greater or less amount, the nature of the disease is such that even this sign may fail at times. Alessandri[5], writing on this subject, says that renal

*Read at the thirty-seventh annual meeting of the American Association of Genito-Urinary Surgeons, May 5, 1925, Washington, D. C.

tuberculosis is subject to remissions, sometimes of very long duration, due not to recovery, but to the walling off of the ulcerocaseous focus. He quotes Carlier, Desnos, Heitz-Boyer and others, all of whom have cited cases of this sort, showing that the disappearance of pyuria and bacilluria may result from a partial occlusion of the kidney without the diseased organ may show a clear urine without pus, or tubercle bacilli. While in the majority of cases the tubercle bacillus is to be found either in a smear of the stained sediment, or by guinea pig inoculation, all writers agree as to the fallibility of both these methods and all report varying percentages of success. Wildbolz[5] claims that smears are positive in about 90%; Furniss[6] reports positive smears in 85% and believes the percentage would be even greater if the examination was always made by an expert. Hyman and Mann[7] obtained positive smears in only 65% of a series of 102 cases, but state that this figure would no doubt be higher had repeated search been made. In a series of 100 cases at the Massachusetts General Hospital reported recently by Jones[8] the smears were positive in but 60%. Here again repeated examination would undoubtedly give better results. It seems to be the consensus of opinion that two factors are at work in determining the percentage of positive smears, one being that to which attention has already been called, namely, the tendency of the disease to wall itself off intermittently and for a greater or less length of time. For this reason the writers agree with Brown[9] that great emphasis should be laid on the value of frequent examinations, in the hope of a so-called "shower" of bacilli. But the second reason, quite as important, is that he who makes this examination should not only be skilled in its performance, but also should be able and willing to spend almost unlimited time in his search of the slide. As Jones[8] says, "several hours search will often disclose the solitary group of bacilli which otherwise will be missed."

While some authors believe that the guinea pig test is practically infallible there seems to be much disagreement. In 1911 one of us (J. D. B.) together with E. L. Young[10] collected 197 cases of renal tuberculosis at the Massachusetts General Hospital in which guinea pig inoculations had been made. It was found that there was an error on the part of the pig of only 0.5%. Hyman and Mann[7], on the other hand, report negative results in 36%. Various writers have reported many proved cases of renal tuberculosis in which the guinea pig test was negative. Here again, as in the smear, several factors are responsible for the negative results. The tendency of the disease to close itself off plays its part, while the technic of the inoculation is a factor of the utmost importance. If improperly done it is useless. Brown[9] has stated that negative guinea pig tests may sometimes be accounted for by the fact that the bacilli are dead. Hryhtschak[11], on the other hand, says that one reason why the guinea pig test is so often negative is due to the particular strain of bacillus. He cites 4 cases, reported by Lowenstein in 1913, due to airan tuberculosis. As this bacillus seems to have a special affinity for the kidneys in man but is not pathogenic for the guinea pig, a negative inoculation test is to be expected.

We have felt it important to discuss at some length the more outstanding difficulties of making a diagnosis of renal tuberculosis for the reason that these are applicable chiefly to frankly tuberculous kidneys so proved by operation, autopsy or long continued clinical observation. In fact in a group of 100 cases from the Urological Department of the Massachusetts General Hospital recently studied by us, the tubercle bacillus was not found at all before operation in 14%, diagnosis being made by clinical examination and confirmed later by the pathologist.

In dealing with the apparently healthy kidney one necessarily must exhaust every means of proof that the organ is actually uninvolved. Even under these conditions we find ourselves in agreement with others that the problem is by no means simple. Bumpus[12] states that more than half the subsequent deaths from the disease occur during the first year "probably from disease in the remaining kidney which it was impossible to detect at the time of operation." Casper[14] has advised against operation on an apparently unilateral case until the guinea pig test has been made and if this is positive, even if the urine from the kidney is pus-free, operation should not be done. Israel[7] takes the same view, Hyman[7], in a series of twenty-eight cases, reported by him says, "the urine from the opposite, supposedly healthy kidney was inoculated into pigs. The urinary, cystoscopic findings and smears gave no evidence of disease of these kidneys. Still, in five cases (18%) the urine obtained from the opposite kidney by ureteral catheterization gave a positive guinea pig test. These cases were, however, followed carefully and none developed tuberculosis of the remaining kidney. Undoubtedly, in these cases the bacilli were either carried to the kidney from the bladder urine, through an infected catheter or the contamination was due to a reflux."

Not only do the writers agree to the possibility of these results being due to reflux from the bladder but we find that some observations of André and Grandineau[13] substantiate this view.

We wish also to mention the possibility of the findings being due to a filtration of tubercle bacilli through a healthy kidney. This phenomen was observed and proved, so far as it is possible to do so, in 5% of our series of cases. That it may and does occur at times, without

coincident or subsequent renal involvement has been shown by numerous observers, Brown[9], believing that when it takes place the bacilli are dead; Casper[14] claiming that it occurs only when there is a nephritis of the so-called intact kidney.

In the face of so much conflicting opinion as to the reliability of clinical and laboratory evidence and being desirous of exercising due caution, what is the surgeon to do? As O'Neil[15] says, "The sediment of the sound, or supposedly sound side, should always be carefully examined for pus. If pus is present, the kidney is to be suspected and guinea pigs inoculated. If there is no pus, it may be assumed that there is no renal tuberculosis." In the present series of 100 cases pus was found in the healthy kidney in 38%. There being no demonstrable tuberculosis of these kidneys, the opposite and obviously tuberculous organ was removed in all. While it has been impossible to follow up most of these cases, we know definitely that 6 or 21% have subsequently developed tuberculosis of the remaining kidney. In contrast to this group, 35 others whose healthy kidney contained no pus whatever are, so far as known, all alive and have no evidence of tuberculosis of the remaining organ.

We find that all writers are in agreement as to the high mortality occuring within the first year after operation. Judd and Scholl[16] report 25.6% of deaths occuring in that period; Bumpus[12] states that "more than half of the subsequent deaths from the disease occur during the first year;" Braasch[17] finds that the late mortality is highest during the first year. We are in accord with Bumpus[12] who says that these deaths are "probably from disease in the remaining kidney which it was impossible to detect at the time of operation."

From our own experience and that of others it seems to be impossible to detect tuberculosis of the kidney in certain instances. We shall not attempt to set a standard by which to go. When, however, the least suspicion of the integrity of an organ is aroused by its local symptoms, the appearances of its ureteric orifice, the presence of leucocytes in its urine or by a retarded and diminished phthalein output then careful and if necessary repeated search for tubercle bacilli should be made. If these organisms are absent the surgeon may then feel that he has done all that is humanly possible, bearing in mind, however, that the final proof will come only with the elapse of time. That many of these cases will eventually develop tuberculosis of the remaining kidney is indisputable. If this unhappy circumstance occurs within a year or two after nephrectomy, who can say whether it was already present at the time of operation or whether it developed subsequent to it? If we believe, as apparently most observers do, that renal tuberculosis is of blood stream origin, then the involvement of both kidneys is not so difficult to understand.

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THORACOPLASTY IN ADVANCED PULMONARY TUBERCULOSIS*

BY WYMAN WHITTEMORE, M.D., BOSTON, MASS.

THORACIC SURGERY—outside of the drainage of acute empyema and plastic operations for chronic empyema—is the youngest of the surgical specialties. It was only in 1912 that Archibald of Montreal performed the first thoracoplasty in America on a patient suffering with pulmonary tuberculosis. In Germany and the Scandinavian countries, surgical compression of the lung has been in use for about 15 years and the beneficial results of the procedure recognized, whereas it is only during the last few years that the rest of the world has familiarized itself with this work and has seen the remarkable results of this surgery.

To this eminent body of pulmonary specialists it may be a presumption for the surgeon to suggest what kinds of cases are fit for surgery. My own experience is not large, but it is large enough to know that there must be a very close coöperation between the medical specialists and the surgeon in handling these cases. As the responsibility for the operation lies largely in the surgeon's hands, and sometimes the entire responsibility when the case ends fatally, it is only just that he should have pretty definite ideas as to what cases should be operated upon or at least what cases he is willing to undertake.

It is my belief that operation is indicated in those cases of advanced unilateral tuberculosis in which sanatorium treatment and artificial pneumothorax have failed. Immediately the question comes up—is here ever a case with advanced tuberculosis of one lung and none in the other. I think such a condition is possi-

*Read before the Wachusett Medical Improvement Society at Rutland, Mass., July 8, 1925.

ble but must be very rare. If such is a true statement is it justifiable to operate on the diseased side when there is a process in the so called "good lung." As my own experience increases and also my knowledge through the communications of other surgeons interested in this line of work, I have come to the conclusion that it is a correct procedure to operate on these patients provided the process in the good lung is of a very limited extent and confined especially to the apex. An active process situated in the lower lobe or about the hilum contraindicates operation. I, frankly say, that it is most difficult for me to determine how active a process is in the good lung. Take a recent case for example. A young man came to me for operation with a very extensive process in his left lung, with cavity formation, and nothing to be heard in the right lung. X-ray however showed considerable shadow in the right lung and X-ray diagnosis was an active process in the right lung. Knowing well the reputation of the pulmonary specialist who sent the patient to me, Dr. Crane of Rutland, and being told by him that in his opinion the right lung was not active I did the operation in two stages with a very happy result. Not long after the operation a well known thoracic surgeon was visiting the hospital and I showed him this patient and the X-rays. It seemed obvious to me that when he saw the X-rays he thought the operation ill advised, but after carefully examining the patient he changed his mind. I mention this case in some detail to show how important and valuable to the surgeon it is to have the close coöperation of the pulmonary specialist.

It may be impossible to produce an artificial pneumothorax on account of the lung being firmly adherent to the costal pleura or the pneumothorax created may be only a partial one, in both these conditions I believe a complete posterior thoracoplasty should be done. I am not in favor of a partial thoracoplasty and a partial pneumothorax. My main reasons for this are that with the formation of adhesions there is a gradual loss of the pneumothorax and as the lung expands there is danger of more infection, and if there is a breaking into the pleural cavity of a small abscess situated in the periphery of the lung an acute pyopneumothorax forms, which may prove fatal. It seems probable that the pressure from the thoracoplasty on the pneumothorax may aid in bringing this about.

Unfortunately there has been a feeling that operation should be undertaken only as a last resort, and patients with large cavities and having had repeated severe hemorrhages are not as good surgical risks as they would have been many months earlier in the disease. Patients fifty years of age and over are poor risks. Operation is especially indicated in lesions of the lower lobe, also in recurrent severe hempotyses when an artificial pneumothorax cannot be produced. The condition of the heart must be investigated in order to determine whether or not it will stand operation. Tuberculosis of the larynx does not seem to be any contraindication for operation, whereas tuberculosis of the kidneys is a contraindication. Whether or not a patient having tuberculosis of the intestines should be submitted to a thoracoplasty seems to be a mooted question, as European surgeons believe these individuals should not be operated upon, whereas American surgeons are rather inclined to believe that they should be.

Of course one's judgment in sizing up a patient in order to determine whether or not he has enough resistance to stand operation is the main guide to selecting cases for surgery. Patients with fibrotic formation and cavitation, with contraction of the lung due to scar tissue formation are proper ones for operations; also those cases with extensive consolidation in which the sputum is small in amount and the pleura thick. There is another type that seems favorable for operation and that is those cases in which the disease shows a rapid progress with a large amount of sputum.

Before taking up the operation, itself, to be used in these cases, I wish to speak of the anesthetic. Some years ago local anesthesia, ether paravertebral or local infiltration, was considered the ideal one. At the present time surgeons are tending more and more towards a general anesthetic or a combination of both general and local. Sauerbruch is using ether, Archibald gas and oxygen or this with local. Up to the last year I have used local entirely, but recently have used gas and oxygen for the second stage of the operation. The main objection to a general anesthetic is that the patient may aspirate the contents of an abscess cavity into some other part of the lung. But it seems to me that this may be provided for by performing the operation after the patient has emptied the cavity by coughing. I have noticed that all the patients on whom I have operated upon under local anesthesia are extremely apprehensive and although the pain suffered may have been very slight, yet the mental anguish that they go through is not good for them. The question often comes up as to whether or not there is any danger in using large amounts of novocaine. This is a difficult question to answer. Chemists believe it is impossible to get any toxic effects from novocaine. On the other hand surgeons have reported fatalities that they believe were due to this. The only patient I have lost may have died from this. He was a young man in the thirties and in rather poor condition. The operation was done entirely with local anesthesia, which was perfect, in that there was absolutely no pain and I could operate just as if the patient was under a general anesthetic. After resecting sections of only three or four ribs his condition became

alarming, so much so that the operation was quickly stopped and the patient returned to his room, where within half an hour he died. Of course the time of operation is much shortened by the use of a general anesthetic and I think this is well worth consideration. At the present moment, I am inclined to use gas oxygen or ethylene in all these cases.

Sauerbruch's posterior extrapleural thoracoplasty, in which sections of the first to the eleventh ribs are excised, is the accepted operation. It is a matter of difference of opinion whether this should be done in one stage or two or more stages. I formerly believed, when using local anesthesia entirely, that this should be done in one stage when the condition of the patient seemed to justify it, and I want to add that in these cases in which the operation was completed in one sitting, I have never had any cause to regret having done this, but at the present time I am inclined to be more conservative, especially in using a general anesthetic, and to do the operation in at least two stages. Up to recently it seemed reasonable to me that in certain cases it might not be necessary to section the first rib in spite of realizing that many surgeons believed that the success of the operation depended on this being done. Lately I have sectioned the first rib and at present feel that I shall continue to do so in all cases. It is difficult to say just how long a section of each rib should be excised. It seems to me that a better result will be obtained by taking out a longer section than a shorter one and thereby obtaining more collapse of the lung. It can readily be understood, on the other hand, that if the disease is not extensive enough or the lung is not fibrotic enough to stand more or less firmly by itself, that in taking out too long a section of each rib, a mediastinal flutter with consequent heart embarrassment and failure may take place. Therefore the length of the rib to be removed must be determined at the time of operation when the operator can see what kind of lung he is dealing with and how it is acting. The danger of aspiration pneumonia on the good side following operation has frequently been raised. I believe this to be a rare complication provided care is taken to prevent this in that the operation is not done until the patient has emptied himself, if a general anesthetic is to be used. I have never met this complication but well realize the possibility and the seriousness of this if it should take place. Recently Lambert and Miller of New York have advocated the resection of the upper ribs at the first stage, believing that the danger of aspiration pneumonia is lessened by this procedure, and Alexander advises Phrenicotomy first and a secondary thoracoplasty of the upper seven ribs for the same reasons. I have had no experience with either of these methods but at the present moment as I feel that this complication is not a common one, I see no reason to change my technique.

Apicolysis, in which the apex of the lung is compressed, may be a very useful operation when one is dealing with a cavity at the apex and disease nowhere else. But when there is disease in the rest of the upper lobe and lower lobe, a posterior thoracoplasty should be done first and if this does not collapse the abscess cavity, apicolysis should be done provided the patient's condition warrants it.

I have had no experience with Jacobaeus' method of cauterizing adhesions between the lung and the costal pleura. In some cases a complete collapse of the lung cannot be brought about by artificial pneumothorax on account of adhesions. Using an instrument with a light, much like a cystoscope, through a small opening in the chest wall, these adhesions are seen and cut with a cautery. The technique does not appeal to me as there is too much danger of hemorrhage and infection. If it is necessary to cut adhesions an operation in which they can be seen, picked up, cut and tied, seems safer surgery.

The results of surgery are to my mind amazing when one considers the poor condition these patients are in. It is remarkable to me that the immediate operative mortality is not much larger than it is. I think 10%, my own, is too high. Out of 10 cases I lost the one I mentioned, possibly from the novocaine. A mortality of 4 or 5% is probably about what should be expected at present. The statistics of the early and late results are valuable but not interesting to go into too deeply and I purposely have avoided them as they are easily looked up. Unfortunately, a patient reported doing well today may be dead six months from now and one reported doing poorly may be almost well a year later.

The immediate result of operation is quite spectacular in some cases. A patient who has been running a high evening temperature of 103 or 104, within a few days of the completion of the operative procedure may have a normal temperature all the 24 hours. One that has been coughing a great deal and raising 8 or 10 ounces or sputum each 24 hours suddenly finds that he has no cough and no expectoration.

John Alexander has collected 1,024 cases, mostly those of European surgeons. The results are roughly as follows: One-third have been cured, in that they are free from any symptoms of tuberculosis activity for at least one and one-half years, no sputum or none containing tubercle bacilli, and are able to do a whole day or a part day's work One-third have been improved or considerably improved, and finally the remaining third is made up of

those cases in which there was no improvement or made worse by the operation, and the patients still under treatment or not traced. The results by American surgeons are very similar to those of European surgeons.

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THE INEVITABLE DAMAGE CONSEQUENT UPON GOITER

BY FREDERICK A. COLLER, M.D.

From the Department of Surgery, University of Michigan

PERHAPS no disease has excited as much interest in the medical profession during the past few years as goiter, largely because of the brilliant advances made in our knowledge of it and because of a more proper appreciation of its frequency. The public especially in goiterous districts has also begun to exhibit an interest stimulated by the prophylatic measures now coming into practice and the diffusion of knowledge necessary to the installation of such measures. Since the recent advances in our knowledge of goiter have been largely in the fields of prophylaxis and in the mechanism and measurement of abnormal activity of goiter, our attention is likely to be focused upon these phases of the subject, to the neglect of certain other aspects of the problem. The fact that goiter may be prevented by the institution of certain measures should not lead us to minimize the dangers of goiter to those who have them and we must not wait for the classical symptoms of hyperthyroidism to appear before instituting treatment. I wish to emphasize the fact that all goiters have potentialities for harm and will in time actually produce serious pathology in a large percentage of goiterous individuals, and I wish to present a few of the high lights on certain of the more manifest evidences of the damage produced by goiter with a rough estimation of its frequency.

The clinical classification of goiter is still unfortunately not at all uniform and is usually made unnecessarily complex by combining abnormal functional variations with different pathological pictures and regarding them as entities while they are simply variations in stage of like processes.

Plummer's[1] classification is simple and workable clinically and is now generally used. According to this there are three histologic variations from the normal thyroid structure: (1) hypertrophy and hyperplasia of the alveolar epithelium; (2) marked increase of the intraalveolar colloid, and (3) the development of new alveoli. According to the dominant type of variation a goiter may be hyperplastic, colloid or adenomatous recognizing that any or all forms may be present in any gland. Three variations in function exist: (1) pure hyperthyroidism; (2) pure hypothyroidism and (3) exophthalmic goiter.

The type of goiter endemic in certain areas is a combination of the colloid and adenomatous elements consequently their problems are allied. Exophthalmic goiter apparently has no peculiar geographic distribution and whatever its etiology may be it does not seem to be closely related etiologically to the endemic form. Its manifestations are dramatic, its prodomal stage short, the need or urgent treatment recognized and its morbidity and dangers are well known, consequently, I will exclude this disease as far as possible from this discussion.

The goiter endemic in many large geographic areas is usually first noted at or before puberty when it may show mild hyperplastic changes which in time give place to the colloid form. The iodine deficiency probably initiates the difference between the ordinary hyperplasia of puberty and the goiter of puberty. This stimulus to goiter formation which has caused the colloid enlargement of the gland at the same time initiates the development of the adenomata which during this period are not usually evident and which may represent a compensatory effort on the part of the thyroid. The origin of the adenomata is not definitely known, but that the stimulus is the same as that producing colloid goiter seems fairly evident. Wölfler's theory that they arise from foetal rests in the interalveolar parenchyma is disputed by Aschoff[2] and others who believe they arise in the ordinary thyroid tissue. Aschoff maintains their origin to be always from centrally situated alveoli and believes that they are definite tumor formations capable of hypofunction, hyperfunction or dysfunction and therefore not controlled by the usual powers governing growth and function. As they grow there usually develops a more or less distinct capsule and the older central part of the tumor undergoes destructive processes while growth proceeds at the periphery. Two main forms of development occur; one with large amounts of colloid in the adenoma, the adenomatous colloid goiter; the other with a dense appearance in which the alveoli of a foetal form are imbedded in a myxomatous stroma, the foetal adenoma. Both forms undergo involutional processes and are the seat of degenerations of many types, haemorrhagic, fibrous, cystic or calcareous and all types may be pres-

ent in any one goiter. These degenerations when present do not represent a new type, but are all variations of the adenomata goiter.

The colloid goiter of puberty gradually recedes as the rate of growth is slowed and by the time the twenty-fifth year is reached the colloid has usually disappeared. Hyperthyroidism associated with the colloid goiter in the adolescent stage may occur, but is rare; mild hypothyroidism, however, is not uncommon in colloid goiter at this time. A goiter once overloaded with colloid seldom returns to a normal state and some colloid tends to persist and the colloid goiter itself may persist even to old age without the development of adenomata and does so in a comparatively small number of cases.

The adenomata characterized by their nodular feel may be evident during the period of growth thru puberty and adolescence but usually are not common until the later half of this time. They have increased in size and in their ratio to the colloid which is diminishing and have thus become evident. Their growth after the age of twenty-five years has become well established and from this time on they dominate the goiter picture. The great majority of all endemic goiters contain adenomata and their history beyond twenty-five years is that of the adenomata. The degenerations mentioned are constantly taking place causing variation in clinical aspects of the goiter. During the latter part of the third decade a small number of them begin to hyperfunction and hyperthyroidism appears. Henceforth hyperthyroidism may appear at any time and usually does appear in varying degrees of severity at some time. The occurrence of hyperthyroidism seems dependent on certain factors the most important of which is time. Other factors of importance are infection, excessive use of iodine, pregnancies and the menopause. Plummer[3] has shown that the average time of the onset of marked hyperthyroid symptoms is seventeen years after the goiter is first noticed and the studies of Boothby[4] which my own studies confirm have shown that a person with an adenomatous goiter may have hyperthyroidism in the late twenties and with each year thereafter have an increasing and definite chance of developing this complication. No accurate determination can be made of the percentage of individuals with adenomatous goiter who develop hyperthyroidism as the only figures available are those on hospital patients, but in this group it is high. Boothby's figures show a percent increasing from 8% in the third decade to 32% in the sixth decade and my own cases show 11% in the third decade increasing to 32% in the fifth decade. Thus in the adenomatous goiters of the fifth and sixth decades alone nearly a third of hospital cases present measurable hyperthyroidism and no one can prophesy at the age of twenty-five which goiter will in the course of time present this disabling manifestation, but the chances are high that the time element alone will bring it about. That the adenomata are responsible for the production of this condition seems clear since their removal promptly causes a return of the basal metabolic rate to the normal. Other evidence of this relationship might be cited.

Aside from the production of hyperthyroidism which is in no wise dependent on the size of the goiter, pressure symptoms due to its size and anatomical position may incapacitate or even case death. While we do not know what proportion of goiters cause these manifestations it probably is an appreciable number. I find evidence of tracheal compression of some degree in 26% of my patients with endemic goiter.

GOITER AND CARDIOVASCULAR DAMAGE

That the cardiovascular system is the chief system attacked in endemic goiter has been clearly pointed out, but the importance of the cardiac damage has not been sufficiently emphasized or appreciated. The types of injury have been studied, but their frequency should be insisted upon. The relation between the heart and goiter was noted in the earliest observations on the disease and this relationship has been insisted upon in a voluminous literature. The mechanism of its production has been controversial between the advocates of a mechanical and those of a toxic etiology. Without a discussion of these theories it can be safely said that the mechanical theory is practically given up while the toxic, or better, the thyrotoxic origin of the goiter heart is generally accepted. Any attempt to determine the gross amount of cardiac damage caused by endemic goiter is impossible because no large series of cases have been analyzed except in hospital groups and most studies have been made on groups of cases with hyperthyroidism including both adenoma and exophthalmic goiter. Plummer[5] pointed out that hypertension existed in patients with adenomatous goiters in marked frequency compared with other individuals of like age.

In the studies of the heart in cases of hyperthyroidism varying statistics are given depending largely on what that observer considered a normal heart. Hamilton[6] found 90% of normal hearts while Bigler[7] considered 90% of his to be damaged. Kerr and Hensel[8] examined 181 cases of adenomas and exophthalmic goiter finding cardiac disturbance in about the same frequency in both conditions and cardiovascular symptoms more or less marked in 44% of the cases with hyperthyroidism. Dameshek[9] in a review of the hearts of 141 cases with hyper-

thyroidism found 28.5% to have definitely damaged hearts. It is only in recent years that exact studies have been made of the cardiac irregularities and striking evidence of the extent of myocardial damage has been shown. Willius[10] estimates that 9% of exophthalmic goiter and 70% of adenomatous goiters with hyperthyroidism exhibit auricular fibrillation. Kerr and Hensell[8] in 58 cases found 34% with this same type of irregularity. Dameshek[9] in his summary of this subject states that it can be safely said that 25% of cardiac damage in hyperthyroidism would probably represent the average figure.

We can concede that in the endemic goiter with hyperthyroidism the cardiovascular damage is present in a large percentage of the individuals and usually dominates the clinical picture. But certain of the patients with adenomata with a normal basal metabolic rate at the time of examination are found to have definite pathologic symptoms that must be ascribed to the presence of their goiter. In an analysis of such a group of adenomatous goiters with normal basal metabolic rates, I[11] found that with each decade of life these patients showed definite cardiac damage greater than that present in other groups of individuals of like age without goiter. The incidence of the damage was progressive, in the fifth decade 4% showed auricular fibrillation and in the sixth decade 30% presented this cardiac irregularity. A pulse rate of 80 or below was found in 46% of the cases in the third decade and in the sixth decade only 20% had a similar rate. Cardiac hypertrophy was present in 18% of the cases in the third decade and in 50% of those in the sixth decade. The cause of this is not clear, but is probably caused by the long standing low-grade thynotoxic agent which has not yet been marked enough to cause the typical clinical picture of hyperthyroidism, yet has caused this amount of cardiac damage. It is possible that measurable degrees of hyperthyroidism have existed in the past, but that damage may exist without this seems likely. When we consider this amount of cardiovascular damage present in the endemic goiter with and without hyperthyroidism it will allow us to prophesy that an adenomatous goiter will eventually lead in the great majorty of these cases to cardiac abnormality of a high grade of severity. Large numbers of cases with goiter present themselves first for treatment of heart disease and greater attention should be paid to this agent in the production of heart disease which should be placed in goiterous districts on a par at least with syphilis and rheumatic fever as an etiological factor.

GOITER AND MALIGNANCY

The occurence of malignant degeneration in the thyroid gland has been regarded as one of great rarity and this is well borne out by the meagre data available from necropsy records. Wilson[12] in a study of this problem found the incidence in the United States to vary from 1 to 211 in San Francisco to 1 in 2546 in the upper Mississippi Valley. But this is not the point that should interest us in a study of the morbidity of goiter. Crotti[13] states that 90% of all cancer of the thyroid has its origin in goiter and other pathologists agree that most of the malignant tumors do arise from goiter. The use of the term goiter here is misleading as most clinics group the endemic and exophthalmic goiter under the caption goiter. Herbst[14] states that Wilson in the Mayo Clinic has not found cancer arising from the hyperplastic gland of exophthalmic goiter and this origin for cancer must be considered negligible. He considers that the vast majority of carcinoma arises from the adenoma. In determining the frequency of thyroid neoplasms we must consider its frequency not in the total population nor in goiter, but in endemic goiter. Undoubtedly cases do arise in the thyroid, not the seat of goiter, but they are in the minority. Statistics as to its frequency in endemic goiter are not conclusive. Kocher[15] reports 235 cases of cancer of the thyroid in his own series on which complete data was available and 76 on which the data was incomplete in a total of 3500 cases of goiter. He believed he had seen at least 100 other cases of cancer of the thyroid in consultation on whom no records were available. If we count only the 311 cases occuring in his clinic we find about 9% of malignancy in this series of goiters. Wilson (ibid) finds 290 cases in an experience with 10,680 endemic goiters and 5867 exophthalmic goiters, the incidence of malignancy in relation to the endemic goiter group being 2.7%. Warthin[16] states that he has found 55 malignant tumors of the thyroid in about 1260 goiters of all types examined by him and he regards the malignant degeneration of the adenomata as by far the commonest variety of the malignancies. We have here an occurence of cancer in 4.4% of all types of goiters which would make a much higher incidence than this if we exclude the exophthalmic goiter. Pauchet[17] states that "cancers of the thyroid develop on old goiters and never occur in the normal thyroid. The goiter constitutes the precancerous lesion as does a leucoplakia, an adenoma of the breast, a naevus or an ulcer of the stomach. Fibrous and exophthalmic goiter become malignant only rarely, nodular goiter often becomes malignant." In Wilson's 290 patients with malignancies only 61 had not developed a goiter previous to one year before the diagnosis of malignancy was made. Ehrhardt[18] in 200 collected cases of malignancy of the thyroid obtained a history of a previous goiter in 104 or 52% of them. Müller and Speese[19] collected 42 cases with a history of previous goiter

in 25 or 59%. Berry[20] remarks that even in cases in which there is no history of preexisting goiter it will often be found upon examination after removal that the tumor contains cysts, points of calcification or similar evidence of former disease.

It does not seem remarkable that malignancy may occur in goiters not noticed by the patient as we see so freqently hyperthyroidism appearing in elderly women who deny that a goiter is present and in whom, nevertheless, small adenomata may be demonstrated. The rate of growth of a malignant thyroid may be very slow and the neoplasm may exist for a considerable period without any symptomatic evidence presenting itself. As a consequence of these conditions we must admit that all statistics on goiter as a precancerous lesion must be highly inaccurate, but as likely to be too low as too high. The evidence we have found however does indicate that the principal site of origin of cancer of the thyroid is the adenomatous goiter and that this is regarded by pathologists as a definite precancerous lesion. Its frequency in goiters of this type is probably conservatively stated as being in the neighborhood of 3%. It occurs in adenomatous goiters of patients in the cancer age by which time the adenomata, these benign new growths, are the seat of involutional changes which are conditions favorable for malignant degenerations. An incidence of cancer of at least 3% in endemic goiter must lead us to regard it as a prenancerous lesion well worthy of our attention. It is conceded that malignancy of the thyroid is difficult or often impossible of diagnosis until it has invaded surrounding structures, a point at which operative or other treatment is usually helpless. Consequently, our hope of cure must lie in removal of the adenomatous goiter at a time prior to the expectancy of malignant degeneration.

MENTAL AND NERVOUS CHANGES ASSOCIATED WITH GOITER

It is well known that the thyroid gland is intimately associated with certain basic mental phenomena and that hyper, hypo and dysfunction of this gland are productive of abnormal mental and nervous conditions most of them of an immeasurable kind. We have observed in certain cases the presence of psychoses attributed by the examining psychiatrist to the toxic action of the abnormal thyroid secretion. Six per cent. of our cases of adenoma with hyperthyroidism have shown these thyrotoxic psychoses and 2% of our cases with adenoma with a normal metabolic rate have shown similar findings. The relation of these abnormal mental states to the goiter was made clear by the return to a more normal state following removal of the goiter. An attempt to estimate the total mental morbidity produced by goiter is clearly beyond the scope of this discussion, but that it is large if one considers all of its phases seems clear. An examination of the literature bearing on this point brings out two aspects of the subject that have been studied by those interested in the problem, first, an attempt to show a relation between goiter and the true types of insanity and second, studies of the psychoneurotic syndrome of hyperthyroidism. The mental changes of hypothyroidism are well known and need not be entered upon.

Goiter as an etiological factor in the production of insanity is not regarded seriously by the majority of present day psychiatrists, but certain of the French alienists regard it as a possibility. Marzocchi and Antonini[21] in 1893 came to the following conclusions: "The goiterous including congenital cases are eight times more susceptible to insanity than those not afflicted with thyroid enlargement, moreover, if one deducts all congenital cases the goiterous more often become insane than other people." Almadi[22] in 1898 remarked on the frequency of thyroid lesions in aliens; Latarget[23] in 1904 showed the frequency of goiterous manifestations in maniacs and proposed thyroidectomy for their amelioration. Biron[24] in 1904 insisted on the frequent association of goiter with melancholy. Parhon[25] in 1910 ascribes various types of insanity to the presence of goiter and advised operation on the goiter for relief of insanity with report of some favorable results. Phillips[26] in 1919 discusses the high incidence of goiter in three asylums and demonstrates a much higher goiter incidence in the occupants of asylums than in the population from which the inmates were drawn. Laignel-Lovastine[27] in 1922 discusses the relation between abnormalities of thyroid and manic depressive insanity and believes that goiter plays a part in the production of this type of insanity.

Eastman[28] in 1922 records some interesting attempts to treat dementia praecox associated with goiter by removal of the goiter, without however producing any marked improvement and Berkley and Follis[29] have reported the results of treating catatonia by thyroidectomy again without definite favorable changes resulting. Ramadier and Marchand[30] in studies of thyroid of insane patients in a goiter district did not find greater instance of microscopic change in the insane than in those of the sane. As far as one can judge from the evidences and the thought of most psychiatrists the relation of goiter to insanity is at most a distant one, but that in individuals with a psychopathic tendency it may be the exciting cause but not the fundamental one.

On the other hand since the earliest descriptions of Graves disease it has been known that there is a constant association of it with abnormal nervous and mental phenomena. The ab-

normal mentality of both hypo and hyperthyroid states is generally recognized. Studies of the mentality of exophthalmic goiter have been made and its frequent association with psychosis of a toxic type admitted although there is some doubt as to whether the dysthyroidism is the exciting or original cause, it being possible that this disease appears only in those with psychopathic tendencies. No statistical studies could be found as to the frequency of abnormal mental states associated with endemic goiter. That psychoses are not uncommonly associated with the adenomatous goiter in a phase of hyperthyroidism seems clear from our own experience. Other abnormalities may exist when these cases are carefully studied by psychiatrists. Woodbury[31] in a study of the psychoneurotic syndrome of hyperthyroidism draws a distinction between that due to exophthalmic goiter and that of adenomatous goiter. He concludes in part that thyrotoxic psychosis does not merit a separate classification, but that a very definite mental and nervous picture differing in degree and type according to the acuteness and type of dysthyroidism does exist. He also states that in the adenomatous goiter with mild hyperthyroidism depression is far more common and of longer duration than in the exophthalmic type and he regards the depression without delusions as peculiar to this type of goiter. He finds 17% with well marked apprehension and 7% with depression and 6% of the cases exhibited types of insanity with the thyrotoxicity as the exciting factor rather than its fundamental cause.

Minor changes in mental capacity, disposition and reactions are noted by everyone in contact with cases with hyperthyroidism all of them impossible of tabulation, but of definite interest to the patient. Thus no true idea of even the approximate amount of mental and nervous abnormalities caused by endemic goiter can be reached. That these manifestations are usually present with hyperthyroidism is evident and that permanent and definite psychoses appear in goiterous patients only in individuals with a psychopathic constitution in whom the thyroid abnormality is the exciting cause is fairly well established. But these mental changes transient or permanent certainly can be regarded as abnormal, incapacitating and due to the presence of the goiter and are frequent enough so that they add greatly to the total morbidity of endemic goiter.

TREATMENT

That endemic goiter can be prevented in a large number of cases by supplying the necessary amount of iodine to overcome the deficiency of this substance is now well established. It is also undoubtedly true that iodine in proper doses will reduce and perhaps cure many endemic goiters in the early stages when they consist largely of colloid. After the adenoma is well established and grossly in evidence, after the degenerations have begun to take place, medication is rarely successful in causing its disappearance. After the patient has reached the age of twenty-five iodine therapy has little permanent effect in eradicating the adenomatous elements in the goiter and injuducious use of iodine may precipitate a hyperthyroid reaction. The longer the adenoma are present the greater the chance there is of the appearance of disabling pathological and clinical conditions so that one can foretell with certainty that an individual with an adenomatous goiter at twenty-five will in all probability at forty-five have demonstrable lesions of the heart, thyroid and mind. The onset of these complications is usually insidious and the full-blown lesion is ordinarily the first thing that brings the patient for treatment. There can be no field for radio therapy in the early treatment of the adenoma without symptoms, whatever may be said about its effect on the stage of hyperthyroidism. Any prophylactic treatment would have to extend over a long series of years and no evidence has been advanced that the adenoma can be destroyed by any selective action of the rays. The surgical removal of the adenomatous goiter at a stage before the onset of symptoms is safe and accurate. If one waits for the development of the sequelae a mortality begins to appear. Before twenty-five operation is usually not indicated except for gross pressure symptoms and it seems wise to give the goiter a chance to stabilize up to this period, assisting it by medication. The rare appearance of complications and the likelihood of recurrence in adolescence makes surgery inadvisable and no harm can be apprehended by waiting. Removal of endemic goiter after twenty-five has a high prophylactic value and should be urged on the patient as soon as a definite diagnosis is established.

SUMMARY

1. Endemic goiter is composed of colloid and adenomatous elements. In early life the colloid element predominates, after twenty-five the adenoma predominate. These changes are progressive and constant and in time, the length of which is well established, will cause the appearance of symptoms.

2. Frank hyperthyroidism caused by endemic goiter will be found to increase in frequency from the latter part of the third decade to the fifth and sixth decades when at least a third of the cases will have it.

3. Definite cardiovascular damage will appear in at least a quarter of those with hyperthyroidism and in a smaller but appreciable number of those with normal metabolic rates.

4. Endemic goiter is a precancerous lesion with an incidence of malignancy of at least three per cent.

5. Endemic goiter causes many mental changes of a minor, but disabling nature and in those with a psychopathic inheritance may excite the appearances of some mental abnormalities.

6. The progressive nature of the goiter pathology and the appearance of symptoms enables us to attack the goiter at a time when medication has ceased to be effective and when the changes begin to menace the health of the patient. The surgical removal of the adenomatous goiter at this time will prevent the appearance of the great morbidity otherwise to be expected.

7. The removal of adenomatous goiters should be advised on diagnosis in individuals after the age of twenty-five.

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INTESTINAL OBSTRUCTION IN AN INFANT DUE TO MESENTERIC CYST WITH VOLVULUS*

BY GEORGE DAVID CUTLER, M.D., F. A.C.S., AND JOSEPH C. MERRIAM, M.D.

INTESTINAL obstruction, in an infant, due to volvulus associated with mesenteric cyst is so unusual that the following report of a case is considered worth recording.

On the afternoon of May 10th, 1925, a male infant three and one-half months of age was admitted to the Children's Hospital in profound shock with a history of vomiting for two days.

The family history was negative. He was the ninth child of English parents. He was a full term baby, delivered normally and had been entirely breast fed. With the exception of vomiting once or twice daily during the first two or three weeks of life he had always been well and had gained consistently.

In the evening, two days preceding admission to the hospital, the baby vomited practically his entire feeding about ten minutes after nursing. With this vomiting he seemed very restless and cried as if in acute pain. After a half hour or so he quieted down and was free from symptoms until the next morning when he again seemed abnormally restless. He had a bowel movement on this morning. During the day he took his feedings fairly well but continued to be fussy and three times he vomited large amounts, each time shortly after nursing. That evening he did not nurse well and was restless and fussy during the night. On the morning of the day of admission he refused to nurse, vomited again and his color appeared definitely paler than on the preceding day. An enema was given which was returned without fecal material and without blood. During the morning his mother noticed a considerable amount of abdominal distention and that the baby appeared to be very ill.

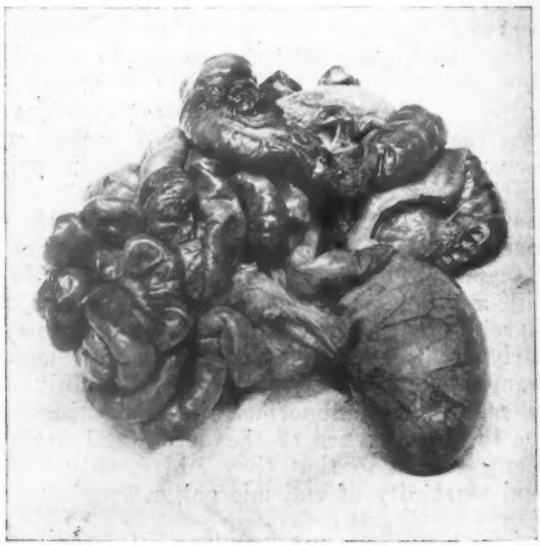

FIG. 1. Photograph of preserved specimen showing relation of cyst to mesentery and intestine

On admission it was obvious that the infant was acutely ill. His color was extremely pale, he was apathetic, his eyes were dull and his respirations rapid, shallow and grunting.

He was well developed and well nourished,

*From the Surgical Service of the Children's Hospital, Boston, Mass.

and there was nothing noteworthy in the detailed physical examination excepting for the abdomen, which was distended, fairly rigid and apparently tender. It was not tympanitic excepting in the epigastrium and left upper quadrant. There was definite shifting dulness in the flanks but no fluid wave was obtained. In the left lower quadrant there was a definite, smooth, fairly movable mass which seemed to be immediately beneath the abdominal wall. It extended from the supra-pubic region across the left iliac fossa to the crest of the left ilium. This mass was flat to percussion. The liver and spleen were not felt. There was nothing abnormal felt by rectal examination and there was no blood on the examining finger.

The temperature was 97°, the pulse of poor quality, rate about 160 and respirations 60. A diagnosis of acute intestinal obstruction was made and the infant was taken immediately to the operating room.

Operation:—Under ether anesthesia a 3½ inch low, right rectus muscle retracting incision was made. The peritoneum was opened with the escape of much cloudy, foul-smelling fluid. On inspection most of the small intestine was plum colored and the peritoneal coat was without lustre. Palpation revealed the presence of a cystic mass about the size of a goose egg, part of which filled the pelvis. This was delivered and was at first thought to be a Meckel's diverticulum. Closer examination showed that it was not connected with the intestine but was a tense, mesenteric cyst. The greater part of the bowel was twisted clock-wise upon itself two or three times with thrombosis of the mesenteric vessel. The volvulus was untwisted. On account of the grave condition of the child, the presence of peritonitis and gangrene of most of the intestine, it was considered useless to attempt drainage of the bowel or removal of the cyst. The wound was, therefore, closed in layers with no chromic cat gut to the peritoneum and fascia and a button-hole stitch of fine silk to approximate the skin edges. The infant was sent to the ward with Levin tube in place. He expired about one hour after operation. A post-mortem examination was made and the anatomical diagnosis was as follows:—

1. Large mesenteric cyst about twenty-four inches below the duodenum.
2. Complete volvulus of mesentery.
3. Thrombosis of mesenteric blood vessels.
4. Gangrene of gastro-intestinal tract from duodenum to rectum.

In the literature there are few references to mesenteric cysts occuring in infants. Baumann[1] reported the condition in a patient aged eighteen months brought to the hospital with a diagnosis of appendicitis. There was sudden onset of acute pain in the right iliac fossa associated with vomiting and obstruction of the bowel with abdominal distention. At operation a flow of non-fetid serous fluid occurred. On the right was a mass of distended coils surrounded by a multilocular cyst. On account of the poor condition of the patient, the cyst was merely evacuated. Death occurred from paralytic ileus, three days after operation.

In our experience most of the cases seen in children occur after the fourth year, and according to Osler[2], as the symptoms are usually those of a progressively enlarging tumor in the abdomen, the condition is difficult to differentiate from tuberculous peritonitis. Colic and constipation are present in some instances. The general health is as a rule, well maintained.

Keen[3] states that in view of the benign character of mesenteric cysts, no symptoms are to be expected except such as result from pressure. The bowel may be compressed or volvulus may take place by action of the cyst mass. The diagnosis is usually very difficult until the abdomen is opened. According to Northnagel, the majority of mesenteric cysts are situated well to the right of and a little below the umbilicus. This point corresponds to the most common situation for cysts in the mesentery of the small intestine.

The treatment of mesenteric cysts has been specially studied by Frentzel, who urges that operation for these tumors should be undertaken as soon as their existence is recognized. The exact diagnosis is to be made by laparotomy only, puncture being out of the question.

The typical treatment consists in total enucleation in case the intestine is not involved but in case blood vessels leading to the bowel are compromised, a resection has to be practiced. Drainage may be necessary in some cases but is by no means to be preferred.

In 1914, C. G. Mixter[4] reported in detail a case of lymph cyst of the mesentery occurring in a girl four and one-half years old. The cyst was successfully removed by operation. He alluded to the work of Arekion (1891), Moynihan (1897) and Dowd (1900) in collecting and classifying cases and discussed the nature of these cysts and their treatment.

Other reports of mesenteric cysts occurring in children have recently been made by Valente[5], Higgins and Lloyd[6], and Rietti[7].

Volvulus in infants is not so rare as the occurrence of mesenteric cyst which was the underlying cause in this instance. Such cysts do not usually attain sufficient size to cause any symptoms earlier than the fourth year of life when attention may be called to them because of enlargement of the patient's abdomen or on account of intermittent attacks of abdominal pain and vomiting.

When the cyst is flaccid it is extremely difficult to palpate. We know of one patient who was repeatedly sent into the hospital for attacks simulating acute appendicitis which subsided as soon as he was put to bed. On his last admission an indefinite cystic mass was felt and at operation a mesenteric cyst was found and removed by Dr. T. H. Lanman. From the findings

at operation it was shown that the cyst hung over the intestine like a saddle bag when the boy was in an upright position, causing at times sufficient drag on the intestine to produce symptoms which were relieved by removal of the cyst.

Most of these cysts are considered embryonic (Wolffian) remnants, others result from congenital occlusion in the lymphatic system. There is also a theory that some true mesenteric cysts arise primarily as diverticula of the alimentary tract. Higgins and Lloyd agree with Cuneo that many ill-defined varieties of retroperitoneal and mesenteric cysts should be called "paraperitoneal cysts." Mesenteric cysts are frequently mistaken for ovarian tumor, movable kidney, hydronephrosis and cysts of the omentum.

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THE MILTON EXPERIENCE WITH ANTI-RABIES INOCULATION OF DOGS*

BY PAUL R. WITHINGTON, M.D., MILTON, AND GEORGE H. BIGELOW, M.D., BOSTON

SINCE 1916 there has been a steady increase in the amount of rabies in Massachusetts, which of late years has been the cause of considerable alarm[1]. From 1916-18 there averaged about 65 known rabid animals in the state yearly. During this time Connecticut was experiencing a marked increase in number of cases. The situation there was brought under control by strict zone quarantine and immunization of animals as reported by Corwin[2]. Predictions of an increase were made in Massachusetts, which were amply fulfilled, the peak being reached in 1923, when there were 465 known cases in animals. Last year the figure was 326. As has been pointed out, the stray dog is the primary agent in the spread of this disease, which may infect man through the bite of a diseased animal, but is rarely if ever spread by man. Corwin reports a mad dog that travelled 143 miles and is known to have bitten 93 animals. The accepted methods of control have been enforced licensing, which means the elimination of the stray dog, and strict zone quarantining when a case of rabies appears. Recently a method of producing an artificially immune dog population has been reported in Japan[3]. Connecticut[2] reports many animals voluntarily inoculated. In some communities in New Jersey[4] such immunization is compulsory. In Massachusetts it has not been recommended by the Division of Animal Industry of the State Department of Conservation as a prerequisite to licensing of dogs because it was felt that the resulting increase in cost of licensing would add to the difficulties of enforcement, which in many communities is deplorably lax under existing conditions.

So much for the general situation in the state. What were the conditions in Milton which led to a general interest in this disease in this community during the past winter? The records for Milton for the last year and a half are:

Date	Number of persons bitten	Condition of dog or result of laboratory examination
Feb. 18, 1924	1	Dog released from quarantine, normal.
Mar. 27, "	0*	Head positive for rabies.
Apr. 24, "	1	Dog killed, no record that head was sent for examination.
Aug. 20, "	1	Dog killed, no record that head was sent for examination.
Oct. 18, "	1	No information.
Jan. 20, 1925	?	Head positive for rabies.
" 29, "	1	Dog released, normal.
" 30, "	0	Head suspicious for rabies.
Mar. 9, "	?	Head positive for rabies.
" 31, "	?	Head negative for rabies.
May 4, "	0	Head negative for rabies.

*Lapped contacts.

Thus in the first three months of this year (1925) there were two dogs whose heads were positive for rabies, and one whose head was suspicious. How many others there were that were not reported can be only conjectured. It is worth noting that subsequent investigation has uncovered two other dogs that were clinically positive. Thus with five clinically rabid animals, two of which were confirmed by laboratory examination, and with the possibility of out of town rabid animals straying in from any direction, the entire dog population of Milton was exposed to the disease, and all dogs were under suspicion.

The Milton Board of Health after careful consideration asked the advice of the State Department of Public Health regarding control measures. Muzzling has been variously advocated as efficient and condemned as inhumane. The consensus of opinion is that it is neither. In the first place the muzzle almost never fits the particular animal to which it is applied and is frequently found hanging around the neck. In the second place, since rabies is generally spread

*From the Board of Health of Milton and the State Department of Public Health.

by the stray, which means the unmuzzled dog, the uninfected muzzled animal is put at a disadvantage in defending himself and may the more easily be bitten and thereby infected because of the muzzle. Muzzling is not advocated by the Division of Animal Industry and was discarded by the Board as a means of control.

Theoretically, if all dogs were restrained from contact with one another during the interval between infection and the development of symptoms, those that became rabid could be disposed of, the others could be released, and the disease would be at an end. This is the basis for quarantine of all cases of communicable disease and their contacts. And it fails in rabies as to a large measure in all other communicable diseases because of the lack of coöperation by the public. Ninety days is the commonly accepted interval of quarantine against rabies. How high a perentage of coöperation from the dog owners could the Board of Health count on for this irksomely long interval? Again, even with a high degree of coöperation, it would be impossible to predict how soon an infected animal from an adjoining town might come in and the whole laborious procedure be repeated, to the intense irritation and with a diminishing degree of coöperation on the part of the dog owners. To be effective, all adjoining towns must enforce the same quarantine at the same time, and they in turn must ask it of their neighbors until the whole state is involved synchronously. But the law specifically states that this is a matter of local option, and local option, while it may develop individual initiative, is never synchronous. Therefore the local Board looked for something more promising.

One of the most effective means of controlling a communicable disease is by the artificial development of an actively immune population, as in the case of smallpox, typhoid and diphtheria. Such a method has been developed against rabies in dogs. In Japan rabies is an enormously pressing problem. Thru a modification of the Pasteur treatment of human beings exposed to rabies, which consists of attenuation thru drying of the virus contained in the spinal cord of a rabid rabbit, the Japanese have developed a safe and efficient method consisting of a single injection. They[3] report that in 1919 15,513 dogs in Tokyo were immunized out of some 20,000 animals registered. The year before this procedure was instituted there were 520 rabid dogs, and the next year this number dropped to 246, none of which had been inoculated. As already stated, this method has been extensively used in Connecticut and New Jersey with good results. The immunity is thought to last at least one year. It has been suggested that a variety of symptoms following the inoculation may be caused by the attenuated virus. It would seem that two unfortunate results might occur, (1) with improper technique secondary infection at the site of inoculation, and (2) with improper attenuation the production of rabies. Neither of these conditions has been reported in large series of cases. Again, the possibility has been suggested that since the immunizing material is made from fixed virus it may not immunize to all strains of street virus. If this is so one would have expected more cases of rabies in the large series of immunized animals, many of whom must have been exposed to street virus.

Considering all the above matters, the inanity of muzzling, the futility of quarantine, and the safety and apparent efficacy of immunizing inoculations, the Board of Health decided to offer this service to those dog owners who desired it. It is of some interest to note that already there was evidence of popular alarm, with the concomitant demand that something be done.

Consequently early in February a letter was sent to every holder of a dog license in Milton reviewing the situation and stating that there would be two opportunities for obtaining these protective inoculations without charge. On the first day 39 dogs were inoculated and on the second 68. In addition 6 others were done at different times, totaling 113, or about 18% of approximately 640 licensed dogs in Milton.

Following this there was considerable public opinion in favor of making the inoculations compulsory. The law covering this matter is in Chapter 140, General Laws, Section 167, and reads in part as follows: "The Aldermen or Selectmen may order that all dogs shall be muzzled or restrained from running at large during such time as shall be prescribed by such order.***"

After considerable thought and advice on the matter the Board recommended the following order to the Selectmen, which order was accepted and signed: "Ordered, owing to the presence of cases of rabies in the town, that all dogs shall be restrained from running at large (that is, tied, leashed, or kept within doors) during the period of ninety days commencing February 20, 1925. Provided, however, that this order shall not apply to dogs which have been inoculated against this disease and bear upon the collar certification of such inoculation." It was felt, since a choice between inoculation and restraint was allowed, that the order came within the statute.

This order was mailed to all holders of dog licenses with a letter from the Board of Health stating that two additional clinics would be held, or that these inoculations might be obtained privately from any veterinarian. At these later clinics a fee of one dollar was charged to cover the cost of the material and the services of the veterinarian in attendance. It seemed just that those who had brought their dogs in the first instance and thereby contributed at the earliest moment to the protection of the community should receive the slight reward incident to free service. The current private rate for this same service varies from $3 to $5. Sixty-four more

animals were inoculated at these clinics, making a total of 177 dogs immunized under the auspices of the Board, which represented about 28% of the licensed animals.

Subsequently the Town Counsel gave the opinion that the order could not be enforced since the dog owner was not permitted the choice between muzzling and restraining as provided by statute. Another legal opinion was that the choice between muzzling and restraint could legally be made by the selectmen rather than the dog owners. However, the advice of the Town Counsel was followed and another order was issued in which muzzling was permitted. All this uncertainty caused considerable delay in enforcing the order.

The police took the list of the 517 dog license holders (representing some 640 individual licenses) in 1924 and visited each one in March. Two hundred and fifty-eight were marked as owning one or more dogs that had not been inoculated and must therefore be either muzzled or restrained. Sixty-nine were marked as having no dog at the time of the visit. In 20 of these it was said that the dog had died. That left 190 that presumably had had one or more dogs inoculated, which represents 42% of the 448 persons that possessed dogs at the time of the visit by the police.

To obtain additional information a letter and return postal card was sent by the Department of Public Health to each one of the 190 names of persons supposedly owning inoculated animals; 189 replies were received, which was unexpectedly high and suggests a considerable interest in the matter. The replies are summarized as follows:

Number of replies	Inoculated by	Number of inoculated dogs	Results Good	Bad
98	Board of Health free clinic	105	103	2
9	Board of Health pay clinic	10	10	0
59	Private veterinarian	62	60	2
23	No inoculation	0	0	0
189	Total	177	173	4

However, the records of the Board of Health clinics, as already stated, showed that 177 dogs were inoculated. Adding to this the 62 reported as immunized by veterinarians privately, there were 239 dogs in Milton known to have received the inoculation. If from the 640 dogs licensed in 1924 we deduct the 69 animals of the persons found on the visit by the police to have no dog, we have 571 as a rough figure for the total licensed dogs in Milton at this time. Of these animals there were at least 41% immunized, which is surprisingly close to the estimated percentage of owners of immunized dogs.

Among these 239 inoculated animals 4 or 1.7% showed bad results, namely, the dogs died. But in 1924, the year previous to the inoculation, 20 or 3.7% reported in March that their dogs were dead. This makes the first figure less significant.

What of the reported results following inoculation? The immediate effects of the inoculation varied from none to local tenderness and swelling, drowsiness, slight limp, dry nose, etc., lasting at a maximum 48 hours, usually not over 24. About three weeks after the injection three dogs showed evidence of illness, two of a gastro-intestinal nature, and one a weakness of the leg said by the veterinarian to be "like muscular rheumatism, which is quite common in dogs." All veterinarians consulted in these cases felt there was no association with the inoculation, and the animals completely recovered. However, the coincidence in time led to some general alarm among the inoculated dogs' owners, as is usual under such circumstances.

The data on the four dogs that died is as follows:

1. An Irish terrier, male, inoculated by Board of Health clinic February 14th. He was well till two weeks later when he "became partially paralyzed and refused food for several days." Dr. X called in and saw him every day but "at no time were there symptoms of rabies." The condition improved, but later there was a relapse, the dog being "unable to stand or even hold up his head, so that he was chloroformed." The head was examined at the Department Laboratory May 4th and showed no evidence of rabies. This information was kindly furnished by the owner. Dr. X said that the symptoms of motor paralysis, without any accompanying sensory paralysis or gastro-intestinal disturbance reminded him of symptoms which he had seen following the eating of spoiled potatoes and corn. He felt they had no relation to the inoculation. The other dog in this family was inoculated at the same time and remained normal thruout.

2. A Boston terrier, 5 years old, inoculated February 22nd by Dr. X, died three weeks later "without showing symptoms of rabies." Unfortunately the head was not examined. Dr. X felt this dog died of distemper.

3. A dog inoculated in February by Dr. X, died 20 days later, and examination of the head March 9th showed evidence of rabies. There is a history that this dog fought with one which earlier developed rabies, so that there is every reason to suppose that this animal was in the incubation period when inoculated. It is known that the single injection will not prevent the development of the disease in a dog already infected.

4. A dog inoculated by the Board of Health February 8th, developed progressive paralysis starting in the hind legs March 1st, and died March 4th. Unfortunately the head was not examined, nor could any information be obtained from Dr. Y who attended the dog.

The evidence shows that the deaths of these four dogs had no association whatever with the

inoculation. This is borne out by the fact that previous to inoculation at least 3.7% of the dogs licensed in 1924 had died, while, eliminating the one case dying of rabies, 3 or 1.2% died subsequently. It is true that the time intervals are not the same but more accurate information would undoubtedly raise the preinoculation percentage of deaths.

SUMMARY

In the presence of five cases of canine rabies developing in Milton during the first few weeks of the present year the Board of Health carefully reviewed the whole question of the prevention of this disease. It at first offered voluntary inoculation of dogs at which only about 18% of the dogs were immunized. Then in the presence of growing popular interest choice of restraint, muzzling, or inoculation was ordered. There was some difference of opinion as to whether under the existing law muzzling had to be offered as an alternative but there was no doubt of its utter futility. In the end about 41% of the dogs were immunized.

Efforts to enforce restraint met with the customary indifferent results. Dogs wandering in from outside the town were occasionally picked up to the intense and usually voluble irritation of their owners. As quarantine of any common communicable disease in a given community is in general no better than public opinion demands, so the quarantine of dogs to which public opinion was largely indifferent was indifferently enforced. This is the conventional situation and suggests that more and more we must depend on active immunization to protect communities against the ravages of rabies.

Another irritation was the ease with which the tags, given out at the time of inoculation and affixed to the collar by a soft metal ring, were lost. Much of this was accidental but there is reason to suppose that some, at least, were stolen. This was the experience in another town in the state where a few animals were inoculated to avoid the nuisance of restraint.

Another example was given of how ordinary sickness among dogs may be ascribed to the inoculation and may be passed from mouth to mouth until their number has been enormously exaggerated causing resentment against the whole procedure. In some instances an entire program may be thrown out by the exaggeration of a mere coincidence. This, fortunately did not occur here.

CONCLUSIONS

1. The protective inoculation of dogs against rabies is apparently a safe procedure.

2. It is, of course, impossible to say from this small, superficial, and uncontrolled study how much the inoculations contributed to the reduction of rabies in Milton, but results obtained so far, in the light of experience elsewhere[2,3], would seem to show that extension of this method offers a promising means of control of canine rabies.

3. Chapter 140, General Laws, Section 167 should be revised, striking out the words "and muzzling," so that there shall be no question as to the legal necessity of permitting muzzling, which has proved utterly futile in controlling this disease.

4. It would seem to be entirely practical to require inoculation as a prerequisite to licensing dogs, as advocated in New Jersey[5].

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WEIL'S DISEASE—A SPORADIC CASE

BY OWEN O'NEILL, M.D., AND EDWARD OTTENHEIMER, M.D., WILLIMANTIC, CONN.

WEIL'S disease is so infrequently encountered, particularly in a sporadic form, that we feel justified in reporting this case which baffled us diagnostically for no little time.

CASE: An American, F. P., age 29, unmarmarried, employed in a silk factory, was sent into St. Joseph's Hospital with a diagnosis of acute appendicitis. His chief complaint is "pain in the right side."

Family History—Father died of "cancer of the bowel;" mother is living and well; one brother and one sister are alive and well. There is no history of tuberculosis nor insanity.

Past History—He considers that his past health has been good. He had the usual diseases of childhood without sequelae. He contracted influenza in 1918. He has never been operated upon. He denies venereal disease.

Present Illness—The patient dates the onset of the present illness to two days before admission when he began to have mild pain in the right abdomen especially toward the upper quadrant. Upon questioning, however, he states that for about a week prior to the beginning of the abdominal symptoms he had experienced a general malaise, headache, and the annoyance of being readily fatigued.

Shortly after the onset of abdominal pain he became nauseated but could not vomit. He developed a distaste for food of any kind. His bowels moved several times which was quite unusual for him. The following day the pain became more severe and he noticed, on self-

palpation, a tenderness over his whole right side. He felt very tired and weak. There were no genito-urinary abnormalities, and nothing to suggest involvement of the respiratory system.

Physical Exam:—Patient is an undernourished young man who gives an intelligent history. He looks sick.

Pupils are equal, regular, and react well to light. Sclerae are clear.

There is considerable dentistry in the mouth. Throat is not red. Tonsils are small. There is no cervical adenopathy.

Lungs are clear and resonant.

Heart is not enlarged to the right nor left. There are no murmurs.

On inspection the abdomen is negative. On palpation the lower pole of the spleen is felt below the border of the ribs. The edge of the liver is palpable about 2 cm. below the costal margin. There is tenderness on deep palpation over the whole right abdomen. Percussion yields only a definite hepatic and splenic enlargement.

Genitalia are negative.

Rectal examination reveals nothing abnormal.

Reflexes are active.

Temp. 101—Pulse 88—Respiration 18.

Subsequent History and course: About six hours after admission the patient had a severe chill and the temperature rose to 102.4. He complained of constant headache which he located in the occipital region. Nausea was persistent but he was able to retain light liquids.

The day following admission the Widal test was reported negative.

Red count—5,500,000.

White count—8,800.

Smear: P. M. N's 70%; lymphocytes 28%; eosinophiles 1%, transitionals 1%.

Uranalysis:

Transparency—moderately turbid.
Color—straw.
Reaction—acid.
Specific gravity—1.015.
Albumen—none.
Sugar—none.
Phosphates—in excess.
Acetone—trace
Diacetic Acid—none.
Bile—none.

Microscopic—occasional pus cell and a few epithelial cells, no casts nor red cells.

Three days after admission the patient became deeply jaundiced. He began to vomit and was unable to keep down even small quantities of water so that fluids had to be administered rectally. He was extremely debilitated. The abdomen showed no material change from the original examination.

At this time the white count was 7,800 and a second Widal was negative. The urine contained a large amount of bile, as well as casts and albumen.

Five days after admission the patient began to vomit blood in rather large quantities. The blood was dark red in color. Preceding and associated with the hematemesis was epigastric pain.

Six days after admission the patient's mental condition changed decidedly. At times he was delirious and was kept in bed only with great difficulty. He became alternately profoundly somnolent and markedly restless. In addition, about this time, he began to complain of violent pain in the back and extremities causing him to cry out as though in agony.

Morphine gave him but little palliation. Bowels could not be moved even with enemata.

The patient remained in this condition several days and his debility seemed so striking that we held out a very unfavorable prognosis. On the 10th day, however, the jaundice began to disappear and he became able to retain fluids. The pain in the back and extremities gradually diminished in intensity leaving areas of anesthesia. This was particularly noteworthy in the palm of the left hand which remained "numb" for many days.

His general condition improved slowly but definitely the asthenia being the most significant factor in the prolongation of his convalescence.

Discussion—The surgeon is confronted with innumerable diagnostic problems in cases which are sent to him with a diagnosis of acute appendicitis, but one that terminates in such varied and seemingly unrelated symptomatology as the above case must be quite rare.

At the outset of this case, in view of the leucopenia, enlarged spleen, high temperature, and general clinical appearance of the patient, we made a tentative diagnosis of typhoid fever. His subsequent course, even more than the negative Widal tests, disproved this conclusively to our minds.

Later we considered in the differential diagnosis catarrhal jaundice, pylephlebitis, and hepatic abscess. Because, however, of the acute course of the illness in a young male, who showed an enlarged liver and spleen; intense icterus; bleeding from the gastric mucous membrane; severe pains in the back and extremities; delirium and prostration, we believe the clinical syndrome thus constituted to be consistent with a diagnosis of Weil's Disease.

So far as we have been able to ascertain Weil's Disease has never been seen in epidemic form in this community.

Sporadically, it must be very uncommon in any community.

CONVALESCENCE, VIII:—NOTES ON CONVALESCENT WORK IN THE U. S. ARMY

BY JOHN BRYANT, M. D., BOSTON

V. STATISTICAL REVIEW

On reflection, it will be obvious that its inclusive character and the great numbers of patients coming under its influence, placed the Division of Physical Reconstruction in a position unique in the Army care of hospital patients.

Other Divisions, as the Medical and Surgical, or their sections, as the Neuropsychiatric and the Orthopedic, came into contact only with those patients classified as belonging under their supervision. The Division of Physical Reconstruction alone, came in contact with patients from all the Medical and Surgical Divisions in all the active Army hospitals in this country.

Consequently, it would seem incumbent upon those who would see medicine advance, to pause long enough to pass in careful review some of the findings based upon the enormous total of experience accumulated by the Division of Physical Reconstruction, during the progress of its work for the promotion of better convalescent care for both medical and surgical patients. This accumulated experience points in a direction definitely confirming the previous personal experience and prophecy of the writer, for of all the work conducted by the Occupational Department, that which best survived the test of clinical application was the Academic work in the wards.

In other words, Army experience, on a scale seldom if ever before approached, has pointed the way to a practical and beneficial system of convalescent care.—one which leads with certainty to maximum mental and physical improvement of the convalescent patient.

With the trail so clearly blazed, it is now obviously up to our civil hospital boards to combine with civil educational boards, in an effort to duplicate in their care of patients in civil life, some at least of the notable advances resulting from Army experience in the care of convalescence. Such civil-life patients should of course convalesce, not in city hospitals at high cost, but in economical and well organized country convalescent institutions, equipped to duplicate the results accomplished for patients in the Army by the Division of Physical Reconstruction.

It would indeed require a mental bolshevik to wave aside, as useless or unimportant, conclusions based upon Army work carried out over a period of one and one-half years, covering a total of 519,682 Occupational Enrollments, and with a total of 273,243 patients coming under observation within the specified period of one and one-half years.

The impressive size and scope of the Occupational and Educational work carried out under the direction of the Division of Physical Reconstruction may at least be suggested by the Extracts which follow. They are taken from the routine Educational Service reports of this Division, for the months of March and May, 1919. The Tables (six) are compiled from the figures in the Educational Service Reports.

The Educational Staff itself reached maximum numbers (2,385) in May, 1919, the month of the peak load of Educational work. The size and the distribution of its personnel at this time are indicated in Extract 1.

In addition to hospitals not indicated on this list in Extract 1, as Fox Hills, the writer in the course of his duty as Consultant, repeatedly inspected and reported upon fifteen of the total of forty hospitals given in the list. Included in these fifteen (asterisked*) hospitals personally visited, were the second and third largest and most important of the forty-five hospitals functioning in Educational work. At the fifteen hospitals visited, there came under the observation of the writer, 874 or about one-third of the total of 2,385 persons constituting the Educational Staff personnel.

EXTRACT 1

Staff

The Educational Staff for May (2,385) shows a slight increase (43) over that for April (2,362). Excluding duplicates, the figures for the Educational Staff for May are as follows:

Commissioned Officers	252
Non-Commissioned Officers	509
Enlisted Men	241
Reconstruction Aides	1,274
Other Civilian Employees	
Men	78
Women	31
Total	2,385

Following chart shows the distribution of the Educational Service Staff in the various hospitals during May:

Hospital	Staff
*Walter Reed General Hospital	138
Letterman General Hospital	107
Ft. Bayard	65
*No. 2 Ft. McHenry	80
*No. 3 Colonia	112
No. 6 Ft. McPherson	49
*No. 7 Roland Park	36
*No. 8 Otisville	49
*No. 9 Lakewood	60
*No. 10 Boston	57
*No. 11 Cape May	32
*No. 16 New Haven	46
No. 19 Oteen	59
No. 20 Whipple Barracks	32

No. 21	Denver	68
No. 26	Ft. Des Moines	98
No. 28	Ft. Sheridan	181
No. 29	Ft. Snelling	86
*No. 30	Plattsburg Barracks	17
No. 31	Carlisle	63
No. 36	Detroit	63
*No. 38	Eastview	41
No. 42	Spartanburg	40
	Ft. Sam Houston	80
	Ft. Riley	59
	*Camp Devens	35
* "	Dix	59
"	Dodge	72
"	Gordon	22
"	Grant	64
"	Jackson	41
"	Kearny	41
"	Lee	31
"	Lewis	49
* "	Meade	54
"	Mills	10
"	Pike	39
"	Sherman	55
"	Taylor	41
* "	Upton	58
	Total	2,385

Enrollments in the Americanization Courses have been mentioned. A consideration of Extract 2 suggests the scope of some of the possible influences for good which, it is reasonable to hope, might result from such work.

The varieties of work and occupation conducted in the wards themselves, under the subsections of Ward Handcrafts and Ward Academic, are indicated in Extract 3.

EXTRACT 3

WARD WORK

Work in the wards is divided into Ward Handcrafts and Ward Academic Work. The figures for the number of enrollments in all Educational Work comprise the number of enrollments on the first of the month plus admissions during the month. This method aims to give full credit to the hospital for its Educational Work.

Work in the wards for March shows an increase over that of the preceding months. The increase in enrollments and the increased demand for instructors emphasize the value of this work. The enrollments for Ward Handcrafts are as follows:

	Dec.	Jan.	Feb.	Mar.
Work with Textiles (knitting, weaving, etc.)	991	2,413	3,612	4,786
Wood Working (carving, toys, etc.)	550	941	1,808	2,439
Reed, Cane and Fiber Work	534	897	1,555	2,596
Work in Applied Pattern (lettering, etc.)	271	210	284	282
Metal Work (jewelry, etc.)	204	489	1,124	2,363
Leather, Cardboard and Binding	66	374	651	1,233
Work in Plastic Materials (pottery, etc.)	50	298	362	446
Unclassified enrollments	1,251	—	796	1,650
Totals	3,917	5,622	10,192	15,795

Ward work in academic shows a total of 3,194, thus giving a total of ward enrollments (academic and handcrafts) of 18,989. This is a considerable increase over the ward enrollments for the previous months: December, 4,486; January, 6,229; February, 11,456.

The subjects and enrollments for March are as listed:

Typewriting	440	Drafting	47
Arithmetic	352	Braille Reading	45
English	336	French	43
Reading	322	Telegraphy	23
Spelling	223	Lip-reading	16
Penmanship	208	Salesmanship	13
Shorthand	190	Speech Correction	6
Drawing	186	Italian	6
Music	81	Science	5
Higher Mathematics	68	Advertising	3
Business English	62	Geography	3
Bookkeeping	60	Civil Service	2
Spanish	51	Commercial Law	2
Agriculture (study)	48	Latin	1
Unclassified	352		
Total Ward Academic	3,194		
Total Including Handcrafts	18,989		

From Extract 4, one may learn the types of occupation offered to, and accepted by some tens of thousands of patients who, though they had progressed sufficiently toward health to permit of ambulatory treatment, yet had not arrived at a point justifying discharge from hospital care.

Many of these patients were merely continuing work previously commenced in the wards. Others, of course, had been received as ambulatory patients, and were sent directly to shop or school for occupational assignments. It will be noted that all Academic work conducted in shop or school was listed under the sub-section of General Courses.

EXTRACT 2

RISE OF ENROLLMENTS IN AMERICANIZATION COURSES

	1918 Aug.	Sept.	Oct.	Nov.	Dec.	1919 Jan.	Feb.	Mar.	Apr.	1919 May
English	84	72	52	58	122	535	889	1,338	1,490	1,828
Reading	179	204	261	222	421	371	557	739	656	888
Spelling	158	140	107	155	248	347	510	702	769	1,013
Penmanship	200	239	315	256	608	707	1,194	1,638	1,861	1,997
Geography				12	12		7	52	83	177
History			5	20	20	20	84	30	70	54
Arithmetic	251	263	285	245	570	720	1,134	1,765	1,838	2,279
Total	872	918	1,025	968	2,001	2,700	4,375	6,274	6,767	8,236

EXTRACT 4

Shop and School

The work in the shop and school has been divided into three divisions according to the *Educational Officer's Handbook*, namely:

I. General Courses, which include academic and professional subjects.

II. Technical Courses, which include
  (a) Shop and Trade Courses, e. g., Electrician, Machinist, etc.
  (b) Commercial, e. g., Typewriting, Shorthand, etc.
  (c) Agriculture, e. g., Gardening, Crop Study, etc.

III. Recreational Courses, which include drill, physical culture, etc., *prescribed by the Ward Surgeon.*

Note:—In giving enrollments and individuals enrolled in Recreational Courses include only courses prescribed for curative value—do not include voluntary activities.

The enrollment in shop and school subjects as classified above for the past four months is given as follows:

	Dec.	Jan.	Feb.	Mar.
I. General Courses	2,439	3,166	5,845	7,045
II. Technical Courses				
(a) Shop and Trades	2,010	2,973	4,611	7,018
(b) Commercial	1,117	2,013	3,276	4,713
(c) Agricultural	564	808	1,027	1,583
Total a, b and c	3,691	5,794	8,914	13,314
III. Recreational Courses	1,633	2,616	3,261	5,569
Totals	7,763	11,578	18,020	25,928
Total including ward work	12,249	18,172	29,733	44,917
Number dropped during month	4,435	5,695	8,986	15,636
Total at end of month	7,814	12,477	20,747	29,281

In interpreting the above table it should be noted that all Reconstruction Hospitals were not reporting during the past months; for instance, only 23 Reconstruction Hospitals reported in December. Also the Base Hospitals did not open until January, consequently only a few reported that month. Therefore in many instances the figures should undoubtedly be larger.

EXTRACT 5

Types of Cases in Educational Service

The types of cases of disability showing the greatest number of enrollments are:

Orthopedic	5,016
Pulmonary Tuberculosis	3,139
Diseases—Wounds	1,689
Amputation	1,125
Wound or injury of Nervous System	837
Functional Neurosis	730
Eye, Ear, Nose and Throat	536
Insanity	536
Gassed	323
Cardio-vascular	313
Arthritis	246
Nephritis	199
Gastro-intestinal	154
Severe injury to face and jaw	120
Venereal Disease	68
Skin Diseases	66
Blindness	64
Deafness	34
Neurasthenia	32
Speech Defect	6
Paralysis	2
Other General Medical	1,326
Other Surgical Conditions	1,567
Convalescent	1,610
Total	19,738

A consideration of Extract 5 will indicate the types of disability showing the greatest numbers of enrollments in educational work.

It is noteworthy that Pulmonary Tuberculosis appears as second in frequency upon this list, from which may be inferred the importance of adapting the resources of Occupational Therapy to the especial needs of the tuberculous patient.

Table I gives the consolidated figures upon which the subsequent Tables are based. It is not often that one is privileged to utilize data covering a series of patients to be counted not in tens and hundreds, but in tens and hundreds of thousands. Furthermore, the recorded experience of an educational organization which carried upon its rolls an average of over 15,000 students per month (with an average monthly total of enrollments of 28,871), for a consecutive period of 18 months, is entitled to respectful consideration.

This organization, the Division of Physical Reconstruction, gave occupation to an average of more than 50% of an average monthly total of 33,282 patients in hospital; and many of this total of patients were of course inaccessible, for purely medical reasons.

An average staff of 1,404 was required to carry on the work.

All this volume of educational work, in effect that of a national university of 15,000 students, was carried on not only as accessory to and without interruption to, but with positive benefit to the progress of the physical disabilities for which these patients were being medically or surgically treated in hospital. In fact, the departure from hospital of these thousands of patients was positively facilitated by the educational work accomplished; also, as a by-product, the patients themselves were being prepared mentally to occupy a higher economic status in life than had been possible previous to their entrance into the Army.

TABLE I

TABULAR VIEW: OCCUPATIONAL THERAPY SECTION, DIVISION OF PHYSICAL RECONSTRUCTION, S. G. O. DECEMBER, 1918 — JUNE, 1920

Months	Enrollments by Sections					Total Enrollments	Staff	Ratio of Staff to Patients	Patients in Educational Work	Patients in Hospital	Percentage of Patients Occupied
	Ward		Shop and School								
	Craft	Academic	General	Technical	Recreational						
1918											
Dec.	3,917	569	2,439	3,691	1,633	12,249	1,134	1:11	5,292	23,455	23
1919											
Jan.	5,622	972	3,168	5,794	2,616	18,172	1,255	1:15	8,167	28,023	29
Feb.	10,192	1,408	5,845	8,914	3,261	29,733	1,827	1:16	16,296	63,428	26
Mar.	15,795	3,194	7,045	13,314	5,569	44,917	2,321	1:15	24,969	74,946	33
Apr.	18,829	3,552	7,620	15,705	7,033	52,739	2,362	1:22	28,500	66,640	43
May	20,641	4,961	8,056	15,043	8,149	56,850	2,385	1:24	30,096	62,964	48
June	18,317	5,172	6,502	12,899	6,908	49,798	2,233	1:22	26,339	55,554	47
July	14,110	3,714	5,269	9,810	7,272	40,175	1,582	1:25	20,578	37,546	55
Aug.	10,719	3,418	4,490	8,774	4,274	31,675	1,364	1:23	15,944	30,258	53
Sept.	10,728	3,323	3,962	7,787	2,973	28,733	1,217	1:23	14,224	24,737	58
Oct.	10,827	2,786	3,947	6,444	3,539	27,543	1,224	1:22	14,072	24,112	58
Nov.	7,371	2,876	3,425	5,465	4,316	23,453	1,189	1:20	13,598	22,305	66
Dec.	7,954	2,459	2,802	4,796	2,810	20,821	1,143	1:18	11,895	17,950	66
1920											
Jan.	7,250	2,992	2,978	4,265	3,184	20,669	1,016	1:20	11,410	16,618	69
Feb.	7,626	2,318	2,715	4,032	2,278	18,969	897	1:21	9,780	16,238	60
Mar.	7,480	2,154	1,937	3,844	1,068	16,483	818	1:20	8,841	13,560	65
Apr.	5,798	1,744	1,981	3,152	1,402	14,077	746	1:19	7,263	11,543	64
May	4,683	1,560	1,209	2,248	2,926	12,626	574	1:22	5,979	9,302	69
Totals	187,859	49,172	75,390	135,977	71,211	519,682	25,287		273,243	599,079	
Monthly Averages	10,436	2,732	4,188	7,554	3,956	28,871	1,404	1:20	15,180	33,282	52

Table II indicates the percentages of the total enrollments by months, for the five sections of Occupational Therapy.

TABLE II

PERCENTAGES OF TOTAL ENROLLMENTS BY MONTHS

Months	Craft	Academic	General	Technical	Recreational
1918					
Dec.	31.9	4.6	19.9	30.1	13.3
1919					
Jan.	30.9	5.5	17.4	31.8	14.4
Feb.	34.2	4.7	19.7	29.9	11.2
Mar.	35.2	7.6	15.2	29.6	12.4
Apr.	35.8	6.7	14.6	29.6	13.3
May	36.6	8.5	14.1	26.5	14.4
June	36.8	10.4	13.1	25.8	13.9
July	35.1	9.2	13.1	24.4	18.2
Aug.	34.2	10.6	14.2	27.5	13.5
Sept.	37.3	11.6	13.7	27.1	10.3
Oct.	39.3	10.2	14.3	23.4	12.8
Nov.	31.0	12.3	14.6	23.4	18.4
Dec.	38.2	11.8	13.5	23.0	13.5
1920					
Jan.	35.1	14.5	14.4	20.6	15.4
Feb.	40.2	12.2	14.3	21.2	12.1
Mar.	45.3	13.2	11.8	23.3	6.4
Apr.	41.3	12.4	14.1	22.4	9.9
May	37.0	12.4	9.6	17.8	23.2

From Table III, it will be seen that the maximum of patients in hospital was reached in March 1919. The maximum of patients occupied, was however not reached until two months later, in May 1919. It will be noted that during the period of 18 months recorded, the percentage of total patients occupied increased exactly threefold, or from 23 to 69 percent.

Tables IV and V give in graphic form the curves of the actual enrollments in the five sections of ward and shop work.

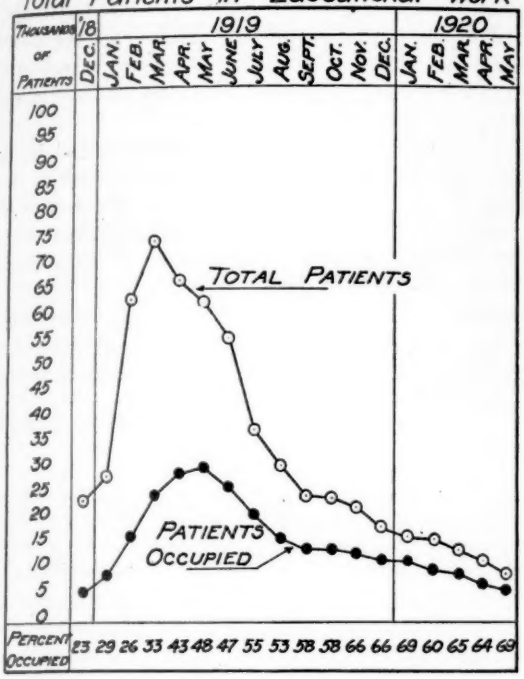
Tables VI and VII give the curves for the percentages of enrollments in the same five sections of Occupational work.

In general, it will be noted that the curves for the three sections of School and Shop work tend downward, in contrast to the rising curves for both the sections of Ward work. This is taken to indicate that accumulating experience pointed to the greater value of Ward work, as contrasted with School and Shop work.

In particular, it will be noted that the curve of Academic work, is that of maximum percentage increase of utilization; it also shows minimum fluctuations. In other words, it would appear to have, relatively, the most constant values.

TABLE III

Total Patients in Hospital and Total Patients in Educational Work


THOUSANDS OF PATIENTS
'18
1919
1920
DEC.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
JAN. FEB. MAR. APR. MAY
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
TOTAL PATIENTS
PATIENTS OCCUPIED
PERCENT OCCUPIED
23 29 26 33 43 48 47 55 53 58 58 66 66 69 60 65 64 69

A glance at the curves (coëfficients) in Table VIII, based upon the figures in Table II, will suffice to indicate that after 18 months of practical trial of the possibilities offered by the five sections of Occupational work, Ward Academic work is, in regard to increased utilization, in a class by itself.

The coëfficients were obtained by taking the average of the percentages of the last three months, and comparing this figure with that for the first three months.

For illustration, the coëfficient for the Acad-

TABLE IV

Actual Enrolments in Ward Work

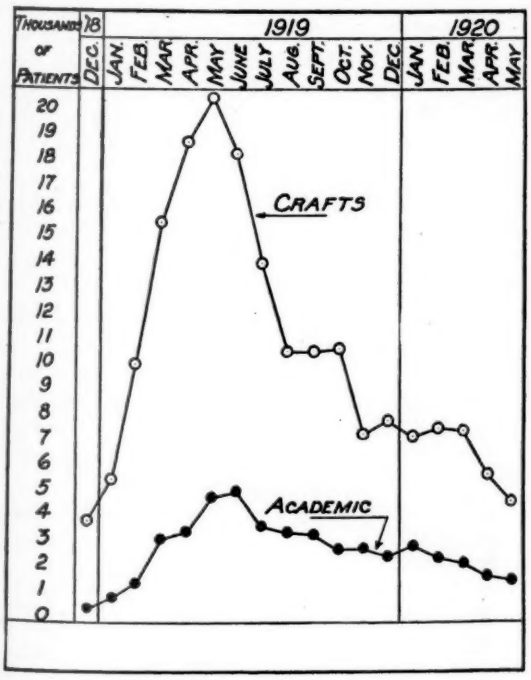

THOUSANDS OF PATIENTS
'18
1919
1920
DEC.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
JAN. FEB. MAR. APR. MAY
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
CRAFTS
ACADEMIC

TABLE V

Actual Enrolments in School and Shop Work

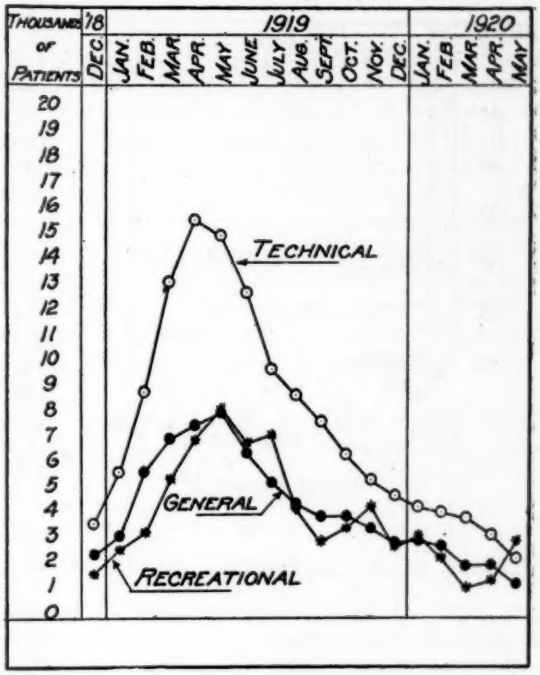

THOUSANDS OF PATIENTS
'18
1919
1920
DEC.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
JAN. FEB. MAR. APR. MAY
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
TECHNICAL
GENERAL
RECREATIONAL

TABLE VI

Ward Work - Percentages of Total Monthly Enrolments

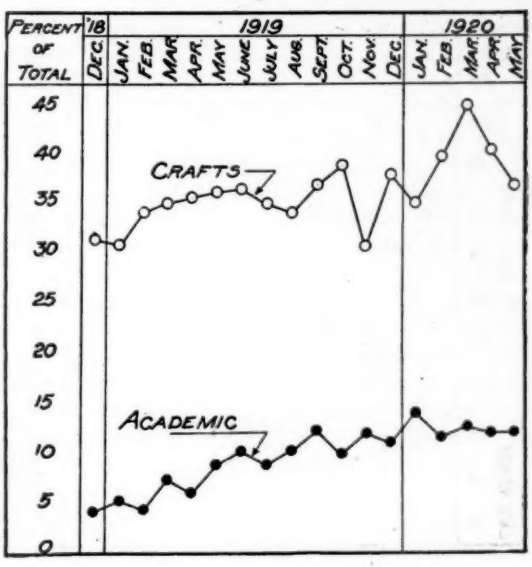
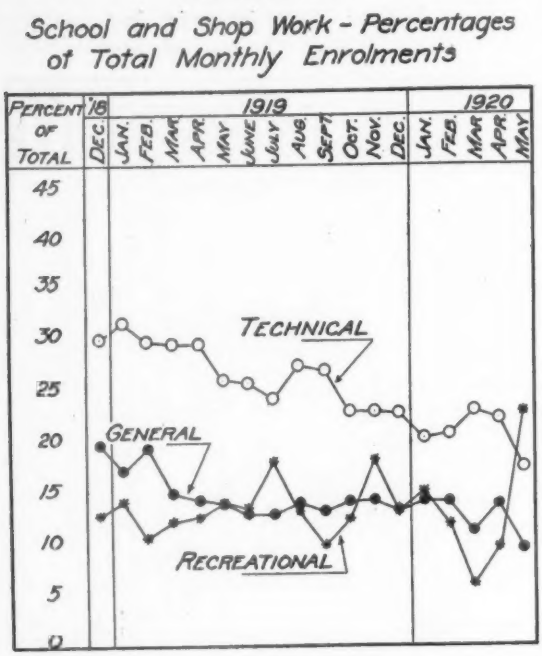


TABLE VII

School and Shop Work - Percentages of Total Monthly Enrolments

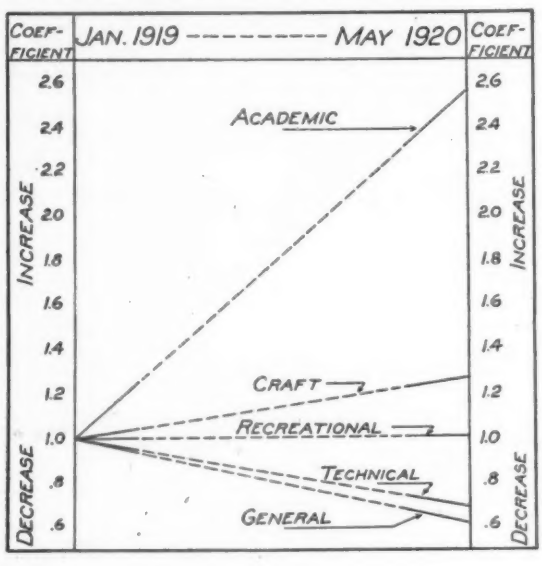


emic curve is 2.57. This means that, as compared with the number of patients so occupied in the first three months, the number of patients occupied in Academic work in the last three months of the period of 18 months under review, had increased by 257%.

Upon the same basis of comparison, with Academic work showing an increase of 257%, Craft work showed an increase in utilization of only 128%; and Recreational work showed an increase of only 102%. Technical work not only showed no increase, but showed an actual decrease in utilization of 62%; and General work showed a still further decrease in utilization, of 69%.

TABLE VIII

Coefficient of Variation in Utilization of the Five Sections of Occupational Work.



Thus, Academic work showed a gain in utilization, 139% greater than shown by Craft work, its nearest competitor in the race for preference as the occupational therapy procedure of greatest proven practical value to the convalescent patient.

This, then, is the most important and striking result arrived at. Ward Academic work is the phase of Occupational work upon which to concentrate, if one believes that Occupational Therapy should give a maximum of permanent value to the convalescent patient.

Again, it is reiterated that, judged by simplicity of equipment and the lasting value of its results, Ward Academic work is unrivalled as a resource of Occupational Therapy.

VI. COMMENT

The Convalescent Department, Walter Reed General Hospital

The Convalescent Department conducted by the writer at the Walter Reed General Hospital, is said to have bridged a definite gap in the routine hospital care of the sick, a gap which previously had not been adequately filled. This gap, a deficiency in the care of the early or semi-hospital stage of convalescence, exists not only in the Army, but also in civil hospitals. It is believed that many features of the work of this Convalescent Department as carried on at the Walter Reed, could with benefit to their patients, be made routine procedure at many of the large civil hospitals in this country.

It is especially desired to emphasize the possible value to Civil Hospitals, of four factors in the success of this convalescent work. The first in importance of these four factors, is the purely medical, referring in particular to the diagnostic or orientation work conducted by the Walter Reed General Hospital Convalescent Department.

Diet, adequately controlled, is of an importance second only to medical orientation work, in promoting the return to health of the convalescent patient. This is mentioned, because hospital diet in convalescence, is a neglected phase of modern medicine.

Thirdly, attention is directed to the extreme value of carefully graded *slow* exercise, not only as an aid to determining the degree of recovery of patients normally progressing toward health, but as an aid in eliminating from a group of normally progressing patients, the mild malingerers who may find hospital life pleasanter within than without the hospital walls.

The fourth success factor worthy of serious consideration, is intelligent utilization of all the available resources of Occupational Therapy, Physiotherapy, and Social Service work, with

the objective in view of promoting a maximum attainment of mental and physical comfort and welfare, not to mention accelerated progress toward health, by the convalescent patients.

From the administrative point of view, the best results would be obtainable if the Convalescent Department, the Departments of Occupational Therapy and Physiotherapy, and the Social Service Department, should all be placed under the responsibility of a single medical officer; this officer should also act as liaison officer between these Reconstruction activities and the usual medical services. Such a responsible Chief of a Convalescent Department, should be placed upon the hospital Executive Committee, as are the chiefs of the medical, surgical and laboratory services; he should like them derive his authority directly from the Commanding Officer of an Army hospital, or from the trustees or other governing board of a Civil hospital.

Physiotherapy

Physiotherapy was brought to a higher stage of efficiency in our best Army hospitals, than is even yet usual in civil life. In order to retain the best features of Army physiotherapy work for use in civil hospitals, it is obviously desirable to utilize in our civil hospitals, physiotherapy staffs, both directors and aides, who have had adequate Army training in physiotherapy.

Occupational Therapy

Occupational Therapy, on account of the unlimited man-power and funds available, was more highly developed in our Army hospitals than has been possible in civil life. There was opportunity to evaluate the good and bad features of Occupational Therapy, and to properly correlate the various sections of this work.

In introducing Occupational work into civil hospitals, if advantage is to be taken of lessons learned in the Army, it would be desirable to obtain the services of *men*, as Directors of Occupational Therapy for the larger civil hospitals,—men furthermore who have had opportunity to realize through practical Army experience, the true value of such work to the Convalescent patient. Reference is specifically made to *men* as Directors of Occupational Therapy, since it was found in the Army that better results were almost invariably obtained, with a man in charge of all the sections of a given Department of Occupational Therapy. It was found to be universally true that the women were of the greatest value in Handcraft work. They were also of value in the more elementary Academic work, but the patients as a rule seemed to take more interest when a male instructor was available for advanced work in any subject.

In applying Army Occupational Therapy work to civil hospital practice, there are certain underlying and fundamental principles which must be taken into consideration. Every patient, after serious medical or surgical injury, goes through three stages in his mental progress toward recovery.

In the earliest stage of recovery, it may at first be impossible to interest the patient in any other than the simpler or even the very simplest and most elementary forms of Handcraft occupation,—this because of the tendency of all patients, to revert, after serious illness, to a childish or even infantile type of mentality. This first stage of recovery is preëminently the period of greatest value during which to utilize all the resources of Handcraft work; such work is also, of course, of great value in all stages of recovery from such ailments as those involving limitation of joint movements, and limitation of mental growth.

In the second stage of recovery, during which the patient is again beginning to take some serious interest in life, the lighter occupations such as Handcraft work tend to become the avocations toward which the recovery patient looks for relief from more serious occupational work. The more serious work should usually be in the nature of Educational or Shop work which may hold some promise of being of lasting value to the patient.

In the third stage of mental recovery, the lighter vocational or curative work tends to be almost entirely crowded out of the foreground, firstly in proportion to the total mentality of the patient, and secondly in proportion to the intensity of his desire to take up again the full burdens of life. It is for the above reasons that Occupational work which stops at the Handcraft stage, falls so far short of its possible maximum usefulness to the average patient.

For women, the place which Educational or Shop work should take with men, may be filled by useful instruction concerning the daily life of the home; in the case of self-supporting women, something of value can be provided in connection with their employment.

It is certainly very striking to observe in hospital large numbers of men recovering from serious bodily injuries, men interested so deeply in the mental work provided for them, that they almost forget the existence of their bodily ailments; and it cannot be denied that such a state of affairs tends to promote more rapid healing of the bodily injuries.

Lest it may be thought that the Occupational Therapy procedures above outlined can be applied only to prolonged convalescence, thus making these procedures inapplicable to patients convalescing with normal rapidity, a conversation between the writer and a very capable Director of Occupational Therapy at Camp A, is quoted in substance as follows:

"There is a widespread belief that your procedures can be applied with benefit, only to those

patients who are to be available to you for weeks rather than days. What is the shortest time in which you can feel certain of giving a patient something to think about, which will stick, and keep on making him a better man after he leaves you and the hospital?"

"If I cannot give any man not a moron, good reason to be glad he came to me, within four days of the time I first see him, I will give up my job. You can take it from me that this work is one of the biggest opportunities for human betterment which a hospital can offer a sick patient, and you can do just as much for an acute case as for a chronic one, if you know your job."

Clinical Neglect

It has been stated that the convalescent patient suffers from clinical neglect. Exception may be taken to this statement. If so, a conversation which occurred in a very large New York hospital should prove suggestive. While on duty at the Surgeon-General's Office, the writer had been requested to speak before the Executive Committee of this Hospital, upon the subject of Convalescence. At the close of his brief remarks, a long thin major arose at the other end of the table, and made vitriolic objections to the inference that any one in his hospital might be in any way neglected. He said that naturally he could not speak for the other services; he was, however, positive that no one could find any trace of neglect in his own service, in regard to any patient whomsoever.

After the heated remarks by the major, the then chairman of the Executive Committee, incidentally one of the best known and most respected of the older physicians of New York City, smiled pleasantly and from his accumulated fund of wisdom and his perspective of advancing years, spoke about as follows: "Well, Doctor, I am glad to hear what you say, and I congratulate you upon being able to maintain such an excellent standard of service.

"But for myself, I can only say that when *I* was on active duty at this hospital, *my* convalescent patients were *all* neglected, relatively speaking; furthermore, I know that now, today, *my* convalescent patients in my own private practice are *all* neglected, as compared with the attention that I must give to those who are more seriously ill."

Comment from the Literature of Convalescence

"For every conceivable reason, the convalescents should be separated from the sick." (Fourcade; 1802.)

"If then the opulent have, long since, discovered that a convalescent's retreat is good for them, will any venture to say that it is not equally good, and infinitely more necessary, for the feeble and disabled of our manufacturing population?

"It is essential, in such an institution, that it be quite removed from the intrusion and frequent visits of the relations and friends of the convalescents." (Robertson; 1837.)

"Convalescence no less than disease belongs to the physician." (Vidard-Dupin; 1844.)

"The convalescent is no longer ill; but one may not yet say that he is well. He is feeble, languid, unable as yet to resume completely the use of those functions and actions indicative of normal health. The study of this state of convalescence . . . is beyond contradiction one of the most interesting which presents itself for the consideration of the physiologist, the physician, and the philosopher.

"It is a state in which . . . feebleness is at its maximum and resistance at its minimum; in which the muscular system, including the heart, is in a state of debility; in which the skin functions not at all or badly; in short, with nervous energy diminished, all the organs are below their normal degree of functional activity; and with this diminution of general tone, comes not only an increased sensitivity but a degree of nervous hyperirritability which seems to vary almost in inverse proportion to the degree of weakness and exhaustion of the convalescent patient." (Brochin; 1877.)

"The motor machinery tends to lose range, scope, elasticity, and nicety of adjustment. Exercise should include accuracy, symmetry, deliberation, normality of direction, moderate speed, and maximum force. Mental training is so inextricably interwoven with motor training that it is practically conceded that motor education is the essence or basis of the whole. The best psychic results come through coöperation of bodily and mental education. This work cannot be delegated by a physician. The reason why so many invalids remain such, or so many convalescents become invalids, is because the medical adviser fails to complete his work, to appreciate the full significance of his duties, to apply his abilities to the perfecting of his measures—in short, to fill in the niche he had modeled for himself." (Taylor; 1905.)

"As the facts in the section on convalescence bring out, the need for financial aid during after care is approximately much less frequent than the need for explanation and advice, given in terms of the patient's degree of education and understanding, and of the practical conditions of his environment.

"The foreign-born patients who had had bedside lessons in English in the hospital and who had heard their own language understood and translated by a sympathetic interpreter, beamed with appreciation at the remembrance. This happy coöperation with the Board of Education can be developed so that the often empty hours of convalescence will be brimming with interest.

"The information gathered in Cleveland agrees entirely with the studies and estimates of Dr. Frederic Brush, the leading national authority on convalescent care, that the medical job is not done at the time the patient leaves the hospital.

"Unless this subsidiary but important investment in convalescence is made, the value of the whole investment may be nil.

"An essential element to any real advance is an adequately maintained convalescent institution. Such an institution does much more than provide care for the particular patients who can be admitted to it. It would serve to stimulate medical study of convalescence, now a field much neglected, and would promote throughout the community interest in the problem of convalescence which will add to the efficiency of all kinds of medical care in hospitals, dispensaries and in the home.

"The cost of maintenance of a convalescent institution is about half that of a hospital receiving the same number of persons with acute disease. A convalescent home is an institution which no city can afford to omit in providing for its sick. Its absence

means burdens upon the hospitals, which involve undue expense, and burdens upon the community which are less easily traced, but which are no less real, being a financial drain upon the charitable public and a definite loss to wage earners and to employing interests." (Cleveland Hospital and Health Survey; 1920.)

"The adequate care of convalescents and of the various subnormal and border-line health conditions, is a major public health need and problem in America." (Brush; 1923.)

"Provision for the care of convalescents constitutes an indispensable complement to hospital treatment. Institutional and convalescent care has evidently become recognized as a community responsibility in New York City." (Public Health Committee of the New York Academy of Medicine; 1923.)

VII. CONCLUSIONS

1. The convalescent patient, be he medical or surgical, has suffered and is suffering from clinical neglect.

2. The convalescent patient will continue to suffer from clinical neglect until it becomes accepted routine that he shall receive adequate treatment in wards (preferably in country convalescent institutions), from which the acutely ill are excluded.

3. Adequate treatment of the convalescent patient implies treatment by a staff especially trained in the intelligent application of such methods as were developed in the Army under the supervision of the Division of Physical Reconstruction, Surgeon-General's Office; a staff, furthermore, trained to care primarily not for the acutely ill, but for those patients, who are (a) convalescing, or (b) suffering from illness not of acute type.

4. The care of convalescence reached a higher level of efficiency in the U. S. Army during the late War, than it has ever reached before or since, in an Army or in civil life.

5. The procedures which in our Army produced such a satisfactory degree of efficiency in the care of convalescence, are available for use in civil life. Foremost among these procedures, may be mentioned Occupational Therapy, and Physiotherapy.

6. An impressive Army experience in Occupational Therapy has demonstrated that, in the order named, Ward Academic and Ward Handcraft work are the two sections of Occupational Therapy which offer greatest promise of potential or lasting value to the convalescent patient.

7. The civil hospital which does not adapt for its own use, those Army procedures which were proven so productive of positive and beneficial results in the care of convalescence, is not yielding maximum returns to its supporters, to its patients, or to its community.

8. Voluntary adequate community care of our armies of young convalescents, is relatively inexpensive. It is the only known alternative to expensive and involuntary care of our armies of old incurables.

9. Inadequate care of convalescence spells:
   (a) half-completed medical work.
   (b) half-cured patients.
   (c) financial inefficiency.
   (d) economic waste.

KENTUCKY IS APPOINTING COOPERATIVE CLINICIANS

THE Kentucky State Board of Health is appointing coöperative clinicians throughout the State for venereal disease work. Members of the State and county medical societies who are listed by the County Health Officer as particularly interested in venereal diseases, are eligible for these appointments.

The arrangement provides for the treatment of indigent patients and for the enlightenment of the community in the venereal disease problem. The patient helps to defray the cost of drugs and of other materials by contributing according to his ability, but not to exceed two dollars. If the patient is able to pay more than two dollars he automatically becomes a private patient. The Kentucky State Board of Health pays half of the cost of the drugs used in the treatment of indigent patients, the clinician paying the other half out of the contributions made by the patients. The State Board of Health makes available to clinicians at cost, drugs and materials to be ued exclusively in the treatment of indigent patients.

Each clinician is supplied with "Venereal Disease Information" and "Social Pathology," two periodicals issued by the United States Public Health Service for use in its coöperative work with State departments of health. The Hot Springs Venereal Disease Clinic is also open to clinicians who may desire to become more fully acquainted with the various phases of venereal disease control. Strip film views of syphilis and of skin diseases simulating syphilis will also be available to the State Board of Health for use in interesting physicians and medical students in fortifying themselves in the detection and treatment of venereal diseases and in actively coöperating with the Health Authorities. These films have been specially prepared by the United States Public Health Service from original photographs and negatives made available through the generosity and coöperative spirit of a number of syphilologists and dermatologists who agree with the Health Authorities that effective venereal disease control depends upon the active coöperation of the physicians and Health Departments. A representative of the United States Public Health Service is coöperating with the Kentucky State Board of Health in the furtherance of this venereal disease activity through public education regarding the nature of these diseases and the value of therapeutic and prophylactic measures.—*United States Public Health Service.*

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11381

MEDICAL DEPARTMENT

A GERMAN housewife of forty-six entered June 5 for study. The chief complaints were headache and drowsiness. The history was given by her daughter. The patient's father died of shock. Eleven years before admission she had a Pott's fracture, right, reduced at this hospital. The general examination at that time was negative. After her discharge she had slight edema of the right ankle. Seven years before admission she had influenza during an epidemic. For the year preceding admission she had edema above the top of her high shoe on the left side, subsiding during the night and not present at all if her legs were bandaged. She occasionally urinated once at night. She passed the menopause three years before admission.

A week before admission she did not feel well. The following day she had indigestion. Five days before admission she did her work about the house, though she felt cold and had rather poor appetite and throbbing frontal headache. She passed a restless night. Next day she had a violent throbbing headache and went to bed. She was thirsty, and in the afternoon had a temperature of 102°. An enema gave no results. She had a good quiet night. She sat on the edge of the bed and was conscious. Three days before admission the headache was much better. The temperature was 100.2°. She sat up in a chair for a while and felt tired. In the evening the temperature was 101.4°. She felt drowsy and did not wish to be disturbed. She slept fairly well. June 3 she complained of inability to void. On two occasions she voided about six ounces. Her daughter, who was a registered nurse, found a palpable mass the size of a grapefruit over the bladder region. Catheterization by a physician gave about two quarts of urine. An enema gave no results. She was very stuporous and weak. She slept fairly well that night. June 4 she could eat only a few mouthfuls of toast because of nausea. She drank a cup of coffee. An enema gave moderately good results. At ten o'clock she took and retained half an ounce of magnesium sulphate and orange juice. She was now so drowsy that it was necessary to shake her and call to her to rouse her. She showed some deafness. Her voice became thickened and at about this time her respiration became of the Cheyne-Stokes type. Her breathing at times was labored. Her daughter packed her in hot blankets. By afternoon she was numb all over and could not move her legs. The fluid intake for the day was about a pint. In the evening she had diplopia, at times blurred vision, and some mental confusion. She passed a very restless night, with Cheyne-Stokes respiration. The morning of admission her temperature was 100.8°. She was brought to the Emergency Ward about half past eleven in the morning. On the way to the hospital she became cyanotic. Her skin was very sensitive to the touch. Urine analysis by her physician was negative for albumin and sugar. Her blood pressure taken by him was 150.

Examination showed a very obese woman, semicomatose and moderately cyanotic, with thick speech. Her skin was dry and hot. Her face was very flushed. The respiration was moderately rapid. The mouth was dry. The gums showed some sordes. The throat was injected. The tonsils were large. The neck was slightly stiff. The lungs showed râles with increased breath sounds and slight dullness at the bases posteriorly. The location of the apex impulse of the heart is given only as the fifth space. There was no enlargement to percussion. The action was rapid, the sounds snapping. There were no murmurs. The pulses were full and bounding. There was engorgement of the veins of the right shoulder. The blood pressure was 145/90. The pelvic examination showed the cervix lacerated and pulled slightly to the left. There was a foul yellow discharge. The rectal examination was negative. The pupils were irregular, with sluggish reactions. There was nystagmus in all directions, possibly poor fixation because of the mental and cerebral condition. The fundi showed engorged veins. The finger-to-nose test was very halting, with tremor. There was slight resistance in straightening the arms. There was slight stiffness of the neck. There was bilateral flaccid paralysis of the legs, absence of knee-jerks, ankle-jerks, clonus, etc. There was no Babinski or Kernig.

The temperature, pulse and respirations rose respectively from 103° to 107°, from 127 to 150 and from 28 to 44. The urine showed the slightest possible trace of albumin and the slightest possible trace of sugar at the second of two examinations. The first, a catheter specimen, showed no albumin or sugar. Both sediments showed rare leucocytes. The hemoglobin was 75 per cent., the leucocytes were 17,800 to 17,300, the polynuclears 82 per cent., the reds 5,248,000, with no marked achromia. Lumbar puncture June 5 gave clear colorless fluid with no clot. Alcohol was strongly positive, ammonium sulphate positive, total protein 78, spinal fluid sugar 59, plasma sugar 110, cell count 80, 100 per cent. lymphocytes, initial pressure 140, pulse and respiratory oscillation present, rise

on jugular compression 220, fall on release 150, pressure after withdrawal of 10 c.c. 120. June 6 lumbar puncture gave 25 c.c. of clear colorless fluid, alcohol strongly positive, ammonium sulphate positive, cell count 69, 98 per cent. lymphocytes, 2 per cent. large mononuclears, initial pressure 195, after withdrawal of 25 c.c. 40, Wassermann negative, protein 50, goldsol 0000000-000, chlorides 667, sugar 77, plasma sugar 119, plasma chlorides 483. An aurist found the ears essentially negative. A neurologist advised repeated lumbar punctures.

The patient grew steadily worse. The night of June 6 she was comatose, with a temperature of 106° and many large bubbling râles throughout the left lung with increased breath sounds and râles on the right in front, but less than on the left. Neurologically there was progression of the process. The fundi were more engorged and the disc margins hazy, more on the right. The left arm was limp. The right still showed resistance to motion. There were no arm reflexes. There was no costal breathing or evidence of functioning of the intercostals. The morning of June 7 she died.

Discussion

BY DR. MAURICE FREMONT-SMITH

We certainly cannot attach much importance to the unilateral edema following Pott's fracture. This is a common finding and surely bears no relation to the patient's present condition. Edema of the legs is often thought of as suggesting nephritis, but in nephritis, unless it be an acute condition with generalized edema, edema of the legs is late. In cardiac disease also dyspnea is almost always a prominent symptom before edema makes it appearance; that is, if the patient is up and about carrying on any sort of activity. Deep and superficial varicose veins are often the cause of edema of the legs, as is any obstruction to the venous return in the groins or pelvis.

Urination once at night may mean something or nothing, depending upon how well the patient is sleeping. The onset here is that of an acute infection. It is striking how frequently headache is the initial or early symptom in so many infectious diseases. The first striking symptom we have is difficulty in voiding and the finding of a distended bladder. As the first neurological sign this is unusual and bespeaks definite pathology in the sacral cord or conus medullaris or cauda equina.

If there is pathology of the conus medullaris alone, we have incontinence of urine and feces, or sometimes retention of urine with incontinence of feces, impotence, anesthesia in a region corresponding to the leather patch in a pair of riding breeches, and *no* paralysis of the legs, as all the muscles of the lower extremities are innervated from segments of the cord higher than the second sacral. The Achilles reflex is likewise innervated by paths travelling through the sacral cord above the second segment. This pure conus syndrome, however, is found rarely, as the conus medullaris is enclosed within the downward streaming fibers of the cauda equina. So with a conus lesion there are usually associated cauda symptoms. If the cauda equina is involved in a pathological process, spontaneous pains are usually present in the perineal, sacral and bladder regions, and sensation, frequently unilateral, is always affected.

It would seem, therefore, that in this case the first evidence of pathology is to be found in the conus medullaris. That this was part of a systemic infection, however, is evidenced by the drowsiness, fever, etc. It should be remembered that in making a neurological examination specific symptoms such as deafness, ataxia, diplopia, etc., are each of specific and localizing importance, and that observations may not be made lightly as to the presence or absence of these symptoms. It is important to know that deafness is actually present and that the patient was not simply stuporous. In other words, with a clouded mental picture it must be extremely difficult to make a diagnosis of deafness, and such a statement should be made only with great circumspection.

Cheyne-Stokes respiration bespeaks interference with the functioning of the respiratory center in the medulla. Whether this be by toxins or by pressure we cannot tell. If the patient was actually numb and the legs were paralyzed we shall have to assume an ascending condition in the cord affecting both motor and sensory portions. We think at once of poliomyelitis of the ascending type (Landry's), but the sensory phenomena, if actually present, rule out this diagnosis.

The physical examination bears out our supposition that this patient has a generalized infectious process affecting the cord and medulla, with a probable concomitant meningitis, although the stiffness of the neck might be due to meningismus. There is little to make out of the physical examination. Any person, even without cardiac failure, who has been lying absolutely quiet on his back will have a few râles at the bases when examined. There may of course be a beginning pneumonia. The heart is evidently negative. I am unable to give any explanation of the engorgement of the veins of the right shoulder. We see this, of course, in chest tumors and in tumors about the shoulder joint. The same remarks made with regard to deafness and ataxia apply to the observation of nystagmus. We should be greatly interested to know whether or not there was actual nystagmus. Probably it was impossible to decide this point.

Engorgement of the veins of the fundus is a doubtful observation without further evidence of pressure. Nevertheles, it is again important for us to know whether or not we are dealing with

some condition intracranial. All the cranial nerve abnormalities might be explained by a meningitis. We can give no importance to the finger-to-nose test in a patient in this mental condition. The stiffness of the neck seems a constant finding and suggests that meningitis is present, but the bilateral flaccid paralysis of the legs, absence of knee-jerks, ankle-jerks, etc., denotes pathology in the anterior horn cells of the lower cord and is not explained by meningitis. The spinal fluid shows an unusual picture. In the first place the total protein, over twice the normal, shows that definite pathology is present in the central nervous system. The sugar is high normal, a finding which still makes us think of encephalitis. The cell count of 80, however, is extremely high for encephalitis, in which disease the spinal fluid deviates from normal only slightly. The fact that all the cells are lymphocytes rules out meningococcus meningitis, pneumococcus or streptococcus meningitis and usually abscess, leaving syphilitic and tuberculous meningitis to be considered. The negative Wassermann makes the former most unlikely, and the sugar is too high for tuberculous meningitis. Occasionally the sugar may be high in an early case of tuberculous meningitis, but a second puncture within two or three days will show a rapid fall in the sugar. We find here that the sugar rises. The picture, then, does not correspond to the findings of any of the usual types of meningitis, nor can we explain the clinical picture by meningitis.

We must postulate, in order to explain the situation, a diffuse infection of the cord beginning in the lower sacral region and ascending, probably involving the medulla and accompanied by a meningitis which does not fit into any of the usual pictures of meningitis. It would have been extremely interesting to know whether organisms were found in the sediment of the spinal fluid. If we look for an etiology of this diffuse myelitis we can only guess that it is caused by the streptococcus, and if this be the case, why have we not polymorphonuclear leucocytes in the spinal fluid?

My diagnosis would be an acute ascending hemorrhagic myelitis of the spinal cord, with an accompanying meningitis, a possible general septicemia and a possible lobar pneumonia.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute polioencephalitis.
Bronchopneumonia.

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Acute ascending hemorrhagic myelitis of the spinal cord.
Meningitis.
General septicemia?
Lobar pneumonia?

ANATOMICAL DIAGNOSIS

Encephalomyelitis (lethargica?).
Wet brain.

DR. RICHARDSON: The examination was restricted to the head and cord. There was slight edema of the pia and a slight excess of thin pale clear fluid in the ventricles. The brain weighed 1405 grams. The tissue was rather wet and showed no definite lesions except that in the section surfaces there was much injection of the vessels and that in the region of the right lenticular nucleus there was a small group of thin brownish-red blotchy areas. The tissue of the medulla and the cord was softer than usual, and the cut surfaces rounded up slightly. The markings were dull and the section surfaces in places showed minute to small rather indefinite dull brownish-red blotchy areas. The vessels showed much injection. The microscopic examination of the brain in various places, including the basal ganglia, showed perivascular infiltration, and a section from an especially congested area in the right lenticular nucleus showed marked perivascular infiltration with small mononuclear cells and small areas of dense infiltration of the tissue by similar cells. Sections from the region of the cortex were negative. The sections from the medulla showed some perivascular infiltration.

Sections from the cervical, thoracic and lumbar regions of the spinal cord all showed more or less well marked perivascular mononuclear cell infiltration. There was also some infiltration of the pia. The appearances of poliomyelitis were absent from the grey matter.

The case is regarded as being one of encephalomyelitis (lethargica?).

DR. FRANK FREMONT-SMITH: It is only in the early stage of the disease that the differential diagnosis between acute anterior poliomyelitis and epidemic lethargic encephalitis presents difficulties to the clinician or to the pathologist. After a few weeks we have in poliomyelitis flaccid paralysis or cranial nerve involvement, or else recovery. No further progression occurs, while recurrences or the appearance of late sequelae are unknown. A few months after the onset we find histologically no evidence of activity of the disease—the mononuclear infiltration of the perivascular spaces and of the grey matter—and the hemorrhages, so like the lesions found in lethargic encephalitis, have disappeared. A diminution in the number of ganglion cells in the anterior horns and a moderate glia proliferation in these regions is the only remaining evidence of the disease—loss of ganglion cells and scar tissue formation.

Very different is the picture in lethargic encephalitis. The onset is insidious, while the clinical course is rarely one of orderly progression. Activity of the process may be manifest for a period of months, somnolence, double vision and rigidity being frequent symptoms. Transient or repeated involvement of one or more cranial nerves is common, while relapse and the appearance of the so-called "sequelae" are the

rule. Persisting flaccid paralysis of trunk or limbs is extremely rare.

The pathological picture in the late stage of epidemic encephalitis is also in striking contrast to that in poliomyelitis. Even as late as three years after the symptomatic onset of the disease the same perivascular and diffuse infiltration of mononuclear cells, seen in the early stages, may be present, indicating continued activity of the virus, and going a long way toward explaining clinical relapses and the late appearance of the "sequelae," which should more correctly be called late manifestations of a progressive disease. This histological evidence of the activity of the process months and even years after the onset is to my mind one of the most fundamental differences between acute anterior poliomyelitis and epidemic lethargic encephalitis.

At this point it is worth recalling that the type lesion seen in both these diseases—perivascular and diffuse infiltration of mononuclear cells—is not at all limited to these conditions, for the same lesions are found in rabies and less characteristically in other diseases.

To return to the case under discussion, the clinical picture is not decisive. The onset is rather abrupt for encephalitis, and the stiff neck, amount of fever and headache are unusual, but so are incontinence, numbness and nystagmus uncommon in poliomyelitis, while the whole picture is complicated by a probable pneumonia. Flaccid paralysis of the legs with absent reflexes and later flaccid paralysis of the left arm is definite, and is the strongest evidence we have in favor of poliomyelitis.

The cerebrospinal fluid examinations would favor poliomyelitis rather strongly if it were not for the complicating pneumonia, which may affect both the cell count and the chlorids. In general the changes from normal in the spinal fluid in the acute stage of poliomyelitis are well marked. The pressure is often increased, the cells always so, usually above 50 per cu. mm., and often well over 100 per cu. mm. These may be polymorphonuclears in the preparalytic stage, but these are rapidly replaced by mononuclear cells. Once the paralysis has set in the cell count gradually falls, so that in the majority of cases it is within normal limits within two to three weeks from the onset. Coincident with the fall in cell count there is a progressive increase in the protein for about the first two weeks and then a gradual return to normal. In the acute stage the protein is nearly always well above the high normal limit of 40 mgm. per 100 c.c. The sugar is within the normal limits of 50-70 mgm. per 100 c.c. when examined after a night's fast, but may be elevated if examined at other times during the day. This is also true of encephalitis and many other diseases, and is dependent on the unusually prolonged alimentary hyperglycemia found in many acute infections. There is nothing specific about a high spinal fluid sugar in lethargic encephalitis. The chlorids in uncomplicated cases may be a valuable differential between the two diseases, since they appear to be diminished in the febrile stage of poliomyelitis, while in encephalitis we have found them normal, 720-750 mgm. per 100 c.c. In this case the low chlorids are probably dependent on the pneumonia and are of no diagnostic value.

In lethargic encephalitis the spinal fluid changes are slight and inconstant. The cells are usually under fifty per cu. mm.; counts above 100 per cu. mm. are rare. In a good many cases the cell count is not increased. The pressure is rarely elevated. The increase in protein if present is slight. Sugar and chlorids I have just discussed.

In the end we turn to the microscope for a decision if a decision is to be made at all. I have been over the slides with Dr. Wright and Dr. Richardson. There is striking mononuclear perivascular infiltration, both in the cord and in the basal ganglia, with diffuse mononuclear infiltration in the latter region as well. The pia-arachnoid particularly in the cord shows a similar cellular exudate. The cord lesions are against encephalitis, while those in the basal ganglia are more prominent than are usually seen in poliomyelitis. The diffuse mononuclear infiltration of the grey matter of the cord so commonly seen in acute poliomyelitis is absent, no hemorrhages are seen, and there is no evident loss of ganglion cells in the anterior horns. I should hesitate to make a final decision against anterior poliomyelitis on this negative evidence, especially in the absence of very complete sectioning of the cord. A positive diagnosis cannot be made in this case with the data at hand. If I had to guess I should favor anterior poliomyelitis, largely because of the flaccid paralysis of the limbs associated with well marked perivascular lesions in the cord.

Another possibility, suggested by Dr. Maurice Fremont-Smith, remains, that of some condition other than the two diseases under discussion—a meningo-myeloencephalitis of unknown origin.

CASE 11382

Surgical Department

A Polish cotton mill operative of forty-three entered April 25 complaining of weakness, especially in the legs, and dizziness. He had always had good health. Three years before admission he fell thirty feet, landing on his feet, and was in a hospital for two weeks suffering from pain in his back. He was out of work for three months. Ever since that time he had had constant left sided abdominal pain which did not improve or grow worse. For the past six months he had had attacks of dizziness and weakness, especially in the legs, coming on suddenly so that he was apt to fall. At

first the attacks were very frequent, two or three a day. Now they were becoming much less so, one or two a week. He always had headache with these attacks and sometimes had morning headaches. He had a "fog" over his eyes all the time, becoming much worse during his periods of dizziness. He also had frequent momentary chills followed often by sweating, sometimes several a day. His appetite was much increased and he now ate candy, which he formerly did not eat. Five weeks before admission he was in bed for three days with a very severe headache over the top of the head. He was prostrated and unable to move or to recognize his family.

Examination showed a well nourished man with rather thick, slurring speech, whether a language difficulty or pathological was not certain. The examination was negative except for the neurological examination, which showed as subjective findings dizziness, weakness, headache, diplopia, clouding of vision and "chills," and as objective findings choked discs, poor vision, absent left epigastric and abdominal reflexes, active deep reflexes and left ankle clonus.

Before operation the temperature was 97.8° to 99.3°, the pulse 69 to 90, the respiration normal. The urine was turbid at one of two examinations, dark at the other, specific gravity 1.032 to 1.021; the amount was not recorded. The leucocyte count was 10,000. A Wassermann was negative. A neurological consultant found no definite localizing signs. An oculist found choked discs, one with small retinal hemorrhages. The fields showed enlarged blind spots in both eyes, more on the left side. A Bárány test showed trouble apparently above the tentorium. X-ray May 1 showed the sinuses unusually large. The size and shape of the sella turcica was within normal limits. No evidence of brain tumor was found. May 5 there was increased density in the region of the right mastoid cells.

May 9 a left temporoparietal bone flap op- May 8 a combined puncture. The ventricular fluid was bloody, and showed 9 leucocytes, 16,000 red cells, protein 16. The initial pressure was 530, after withdrawal of about 5 c.c. 250; at this point the lumbar puncture was done, and showed an initial pressure of 250. The pressures continued parallel, and the dynamics showed free communication. The lumbar fluid was blood tinged and showed 6 leucocytes, 420 red blood cells, protein 44 mgm., goldsol 0000000000, Wassermann negative, chlorids 727 (normal). After these punctures the patient developed a marked exacerbation of symptoms which were indefinite before, i. e., marked right facial palsy, central, spasticity and incoördination of the right upper extremity, motor aphasia and more or less drowsiness and headache.

May 9 a left a temporoparietal bone flap operation was done, followed by transfusion of 300 c.c. of whole blood. He rallied well after it, and the speech defect and motor disturbances seemed to clear up a little. The temperature however rose. The morning of May 11 he had a brief clonic convulsion involving chiefly the left side but extending over the whole body and followed by unconsciousness and deep breathing. He was rather drowsy the rest of the day, and got out of bed once. During the night and the next morning he had four more convulsions.

May 12 the bone flap was reëlevated. The next day the patient was restless. There was edema and ecchymosis of the left eye. The condition was not definitely improved. He had no more convulsions however, and by the 15th was doing better and had better control of the sphincters. By the 23rd he was sitting up, and by the 27th walking. At his discharge June 3 he was up and about the ward, and although the speech difficulty had not entirely disappeared he was improving steadily.

August 6, two months after his discharge, he was seen in the Out-Patient Department. The arm reflexes were normal. The pupils were equal, regular, reacted sluggishly to light. There was no nystagmus. There was some pallor of the discs. Their margins were somewhat blurred. His vision was improved. He sometimes had difficulty in finding words, but could always find them. The knee jerks and ankle jerks were slightly hyperactive, slightly greater on the right. Adiodokokinesia was not marked. The gait was normal. The right arm was slightly weaker than the left.

Discussion

BY DR. JOHN S. HODGSON

So far as the past history is concerned we have the history of a fall with injury to his back incapacitating him for three months and leaving him for a time with pain in his back, and more recently generalized weakness, especially in the legs, and dizziness. With the exception of the dizziness most of that might be accounted for on the basis of an injury to his spine. The presence of dizziness would tend to suggest cerebral involvement rather than spinal involvement alone. The fact that he was apt to fall suggests the possibility of a cerebellar lesion. The fact that the attacks became less frequent suggests that he might have had increased intracranial pressure at first and that it had begun to decrease, resulting in less frequent attacks.

So far we can only infer what the trouble might be. It might be a tumor, it might be a cyst, it might be a vascular disturbance, it might be syphilitic, or it might be none of these.

The occurrence of chills suggests the presence of infection somewhere. It does not to

my mind suggest the presence of brain abscess unless that is secondary to a focus somewhere else in his body, because chills, so far as I know, do not accompany brain abscess.

His headache in addition to the symptoms already enumerated suggests the probability of increased intracranial pressure.

The speech difficulty might mean any one of a number of cerebral lesions. It might be a symptom of multiple sclerosis. The dizziness, headache, diplopia, clouding of vision, all can go with a subtentorial lesion. The reflexes might possibly go with a left-sided subtentorial lesion, but they also suggest the possibility of a right-sided cerebral lesion.

The temperature ranged from slightly subnormal to slightly elevated, and that in conjunction with the chills might have some significance as meaning a septic process in the brain secondary to some septic focus elsewhere, although so far there is nothing in the history or examination to suggest that a septic focus anywhere was suspected.

From this urine examination we do not know whether there was any kidney disease or not.

The leucocyte count was either high normal or slightly pathological.

The presence of retinal hemorrhages might suggest kidney disease, accounting for the cerebral signs, or of course tumor, giving perhaps a sudden increase of pressure. The enlarged blind spots so far as I know are indicative of increased intracranial pressure and choked discs. They are common findings in choked discs, and I should say have no special significance in this case.

The report of the X-ray examination does not say whether the sinuses appeared pathological or not.

The entire absence of X-ray signs of increased intracranial pressure would be somewhat against the diagnosis of a subtentorial lesion.

The increased density on May 5th might suggest the possibility of a middle ear infection resulting in mastoid involvement and that causing brain abscess. I should not expect to get a fever in brain abscess, although we have some things which might indicate that. The fact that it was the right mastoid cells might mean that it resulted in a brain abscess on the right side.

Dr. W. J. Mixter: May we go back for a moment to the X-ray findings? Dr. Hodgson suggested that the negative evidence of tumor in this case would suggest the absence of a lesion beneath the tentorium. Do you mean that?

Dr. Hodgson: The absence of signs of increased intracranial pressure would be against that, because usually with a subtentorial lesion of long standing at least we should expect some signs indicative of increased pressure either in the skull as a whole or in the sella turcica.

Dr. Mixter: This man was forty-three years old, and I should question that a little bit. I should like to hear from Dr. Camp.

Dr. Hodgson: I did not mean to attach much significance to it. There are some signs which suggest the possibility of subtentorial lesions. If we had found signs in the X-rays of the skull we should have put those together as being significant.

Dr. F. Fremont-Smith: Wouldn't it be fair to say that the negative findings in the X-ray plate suggest that the process had not been of such long duration as we should expect if changes in the skull had been present? In the subtentorial tumors we have hydrocephalus early, and not infrequently skull X-ray changes appearing earlier than we do in lesions above the tentorium.

Dr. John D. Camp: I do not think that absence of changes in the skull definitely rules out neoplasm. It rules out neoplasm associated with increased pressure for any length of time, but I think we have to be careful about ruling out neoplasm, because our skull plates are frequently negative.

Dr. Hodgson: I had no intention of saying it rules it out, but that it is a point against it. So far I should say we have no definite evidence of a subtentorial lesion.

This I should think was an abnormal drop in pressure after the withdrawal of five c.c. in the ventricular fluid. The lumbar puncture was the same as the ventricular. The findings here are those of increased intracranial pressure and absence of dynamic or chemical block, the protein of sixteen being within normal limits and the protein of forty-four within normal limits. Both of these figures are undoubtedly higher than they would be if there were no red cells present.

Following the puncture the signs were entirely new and different from any mentioned so far, and probably are more significant, suggesting the possibility of a left cerebral lesion.

The fact that he had a left-sided convulsion rather than a right-sided one is a little difficult to explain, but it may have been an incorrect observation, or it may have been that he had a convulsion starting on the right side which was not noted, or it may have been that the convulsions were as a rule generalized. We should expect the convulsion to be more on the right side than the left.

Dr. Fremont-Smith: There is a note here made immediately following the combined puncture. "At combined puncture the first ventricle that was tapped for was the left, and the ventricle was not found until the needle was put in nearly toward the midline. Then a very few drops of blood-tinged fluid were obtained, not sufficient for a pressure reading. Then the right ventricle was tapped for and no ventricle found in the normal position, but when

the needle was inserted laterally to the right, the right ventricle was reached." On the basis of the combined puncture we got a very definite suggestion that the left ventricle was compressed and pushed towards the midline, and that the right ventricle was pushed well over to the right. We also, as Dr. Hodgson pointed out, got a prompt drop on the removal of only a small amount of fluid, suggesting again that we were dealing with a small reservoir and did not have a high grade hydrocephalus. As a result of the combined puncture we felt that the lesion was on the left side of the brain, displacing both ventricles toward the right.

PRE-OPERATIVE DIAGNOSIS MAY 9

Temporoparietal tumor, left.

OPERATION

Ether. Left parietal osteoplastic flap. There was profuse bleeding until the bone flap was finally elevated, at which point it was gradually got under control. The dura was tense, and on incising it there escaped under markedly increased pressure a large amount, probably 150 c.c., of milky white fluid, a large portion of which was saved for examination. The dura was then opened wide and the fluid found to come from a large cavity almost the size of the hollow of a partially closed fist. This region lay in the triangle formed by the fissures of Rolando and Sylvius, and had greatly compressed the brain in an area extending almost to the median line in the region of the longitudinal sinus. The walls of the cyst as far as could be made out were formed by arachnoid. There was no evidence of tumor tissue anywhere, and the brain, although markedly compressed, was nowhere grossly destroyed. In the depths of the cyst cavity thick, almost grumous looking material was found, but there was not much suggestion of abscess. The milky white fluid was very unusual looking, nothing similar to it having been observed before. It was examined at once under the microscope, but no pus or anything else remarkable was made out. The wound was then closed with a single layer of silk worm gut suture and a rubber drain was placed in the lower anterior portion of the flaps near the base.

The patient stood the first part of the operation fairly well, but toward the end his blood pressure went down from 180 to a point where it could scarcely be detected. Arrangements were made for transfusion.

PATHOLOGICAL REPORT

Microscopic examination shows a thin membrane having deep wave-like folds. One surface is covered with cuboidal epithelial cells in several layers which have fine thread-like processes on their free surfaces resembling cilia. The other surface has elongated flattened cells resembling those of the meninges. A loose fibrous stroma containing blood vessels fills in the space between the two cellular layers.

The histological appearances suggest a congenital cyst of the meninges.

BACTERIOLOGICAL REPORT

Cultures made on various media from contents of cyst showed no growth.

PRE-OPERATIVE DIAGNOSIS MAY 12

Arachnoid cyst, left parietal region.
Post-operative hemorrhage?

OPERATION

Ether. The base of the osteoplastic flap was clamped off, the sutures slowly and carefully removed and the periphery of the galea clamped. There was not much bleeding. The bone flap was laid back and a clot about three-quarters of an inch thick was found covering the entire dura. This clot was carefully scooped away and the dura was incised along the line of the previous incision. The cyst cavity revealed fluid the character of which suggested accumulation of cyst fluid with some added blood. There was not much clot in this cavity. The cavity was completely cleaned out and again explored to see if any tumor was present. Nothing was found. The cavity was then filled with salt solution. Complete hemostasis was everywhere obtained. The dura was again closed, the bone flap laid back into place, and the wound sutured without drainage.

The patient stood this operation very well, there being no appreciable change in the rate or quality of the pulse or in the blood pressure.

FURTHER DISCUSSION

Dr. Hodgson: At the time of the second operation a small amount of post-operative hemorrhage was found. That was cleared away and there was only a slight reaccumulation of fluid. The finding of this type of cyst was unexpected and unusual. Dr. Mixter I believe had not observed it before. I certainly had not.

We should expect that this man would show continued improvement, because the brain was merely compressed and was not destroyed. Whether or not the cyst will reform and there will be a reaccumulation of fluid is not known, but is not at all improbable.

I believe that in making the diagnosis in this case the combined puncture was what helped us as much as anything, because in tapping for the ventricles they were found to be displaced toward the right side, and following the withdrawal of cerebrospinal fluid for the first time symptoms appeared which gave a definite lead as to the location of the tumor. Previously we had thought it might be subtentorial. Again we had thought it might be right-sided. But

the appearance after operation of right-sided symptoms, in conjunction with the displacement of the ventricles, led us pretty definitely to believe that the lesion was left-sided.

DR. FREMONT-SMITH: We were unable to determine the cause of the milkiness. Various precipitates were used, but we could not get a clear filtrate. We did determine that it had a high chlorid, a high nitrogen, and about one per cent. protein content. Dr. Hartwell said the wall would be consistent with a congenital cyst.

DIAGNOSIS

Subarachnoid cyst of brain (cerebrum).

CASE 11383

SURGICAL DEPARTMENT

A German-American carpenter of fifty-one entered March 30 for relief of pain in the back and the right side. His mother died of cerebral shock. He gave a history of venereal disease twenty-five years before admission and fracture of two ribs in the upper left chest the same year. Frequent sore throat and infrequent tonsillitis were the only diseases he recalled. He took considerable alcohol until the past seven years. He had always used considerable tobacco. He slept very poorly.

Two years before admission he began to have pain in the epigastrium and in the right and left subcostal regions occurring half an hour to an hour after meals, usually at noon, two or three times a week, doubling him up, lasting five or ten minutes, accompanied by nausea, infrequent vomiting and considerable gas, and relieved by hot fluids. This continued from two to four months. The year before admission he had a very sudden attack of sharp epigastric pain on the street, doubling him up and lasting all night, with some gas. In a few days his skin began to turn yellow and he grew weak. His bowels were slightly constipated and his stools clay colored. After the first three nights there was no pain. The other symptoms lasted about six months. He lost 80 or 90 pounds. The Christmas before admission pain developed in his right hip and the posterior aspect of his right thigh one-third of the way down. Then pain developed in both costovertebral angles, the small of the back, the upper anterior aspect of both chests, and the right subcostal region. He had little cough at times and was rather weak. For four weeks he had been in a hospital, where he had lost thirteen pounds. A report from this hospital shows that a Wassermann was negative. X-rays of the gall-bladder showed no evidence of stones. The sputum was characteristic of bronchiectasis. The red blood cells showed moderate anemia. Duodenal drainage showed bile and much pus, no blood. A week before admission he had hemoptysis of about three drams of bright red blood.

Examination showed a poorly nourished man of middle age with productive cough, not obviously jaundiced but with slight pallor. The teeth were poor, with carious stumps. There were palpable glands up to 1 cm. in both axillae. The chest was somewhat barrel-shaped, with poor expansion. The lungs were somewhat hyperresonant, with some faint moist râles in both bases posteriorly. The heart was not enlarged. The location of the apex impulse is not recorded. A rough blowing systolic murmur was heard at the apex in the aortic area. The sounds were forceful. The aortic second sound was accentuated. The abdomen was somewhat protuberant and showed small soft tumors in the subcutaneous tissue on both sides at about equal distances from the umbilicus. A smooth, sharp, tender liver edge was easily palpable about two finger-breadths below the costal margin, descending on inspiration. The tenderness extended into the costovertebral region. There was a questionable deeper globular mass near the rectus border on the right (gall-bladder?). There was marked muscle tenderness on movement of the right costovertebral region, but the movements of the spine itself were not limited or painful. The rectal examination was negative except for slight bilateral enlargement of the prostate.

Before operation the chart was not remarkable, the urine and blood were not recorded.

March 31 operation was done. He made a good operative recovery. There was profuse drainage of bile from the catheter and of blood and serum from the wound, which seemed in good condition. Next day a gauze sponge was twisted, with considerable pain to the patient. The stools were clay colored. He was ordered fels porcini. The gauze sponge was removed. April 6 he pulled the catheter out. Continuous suction was started and worked effectively. He looked and ate better and coughed less. April 10 however he began to be apathetic and stuporous. The next day he seemed to be going into coma and was dried out. April 12 he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

Assuming these facts to be correct we have a direct lead which goes a long way toward differentiating between stomach ulcer and biliary tract disease. I am a little gun-shy, however, after having a case two weeks ago here with clay-colored stools definitely recorded three times and nothing found at necropsy in the biliary tract.

Whenever there is a loss of eighty or ninety pounds a careful investigation ought to be made as to whether or not that loss is consistent with the change in intake of that patient.

Because with trouble in the stomach or duodenum or even the biliary tract, the digestion may be so upset and the intake so lowered that a loss of weight which otherwise would be suggestive of malignant disease can be explained on the basis of that change.

The X-ray does not help us, because straight gall-bladder X-rays are of very little value in the great majority of cases. But the help which can be obtained today from the bismuth X-ray and the Graham test is of value in the majority of cases.

The record does not say whether those tumors were suggestive of lipomata or not.

First, What is it? Next, What to do about it? The evidence that we have points all to the upper part of the abdomen, and if we are to accept the jaundice and the clay-colored stools it points pretty definitely toward a biliary tract disease. Tenderness of the costovertebral angle is often found with the cholangitis that often goes with biliary tract disease, and is hard to differentiate from kidney tenderness. We are not told anything about his urine. The other things pointing toward gall-bladder trouble are the presence of pus in the duodenal drainage, the tenderness over the gall-bladder, the questionable mass in that region. Either they were so sure of the diagnosis that they did not have X-rays or else they have been omitted because they would tell us too much.

Miss Painter: They did not take any, and there was no urine examination before operation. At the other hospital the report simply says, "No bile."

Dr. Young: Of course eighty or ninety pounds is quite a lot of weight to lose, but I believe it is within the limits that can be lost with the upset of digestion and the limitation of intake going with bad cholecystitis.

Can it be ulcer? Can it be carcinoma? Of course carcinoma of the head of the pancreas ought to give progressive jaundice because of the increasing shutting down of the common duct. When this man was in the hospital the report says, "no obvious jaundice." Carcinoma of the gall-bladder or of the common duct itself likewise ought to give a progressively increasing jaundice after it has once been established. Moreover the pain is more suggestive of either stone or a thick mucus trying to go through the common duct. In order to have this amount of obstruction from an ulcer there must have been enough inflammatory process such as would go with subacute perforation in the neighborhood of the gastrohepatic omentum to shut down on the common duct. It seems hard to fit cancer or ulcer of the stomach into this story.

I do not see what else we can lay this to except disease of the gall-bladder, so that I assume that is the pre-operative diagnosis, and if so the only treatment I can see is operation, to give drainage to the inflammatory process and to relieve the obstruction if possible.

Can this be a recurrent pancreatitis? I think that is within the limits of possibility, because that process can recur a number of times and take care of itself up to a certain point. I do not see that we have any right, however, to assume that it is the whole story. I should put down first cholecystitis with stones, the others poor seconds, and advise operation on that basis.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Cholecystitis with stones.

PRE-OPERATIVE DIAGNOSIS

Gall-stones.

OPERATION

Gas-ether. Upon opening the abdomen through a high right rectus incision the liver was found to be enlarged and thickened, but showed no evidence of nodules. The stomach was found to be normal. The gall-bladder was not felt. On the under surface of the liver where the gall-bladder should be situated was a dense mass of omental adhesions. Palpation of the pancreas showed a mass which was irregular and hard, about the size of a good sized orange. It was surrounded by enlarged hard lymph nodes. The lymph nodes were removed over the region of the neck of the pancreas and some oozing was encountered. The gall-bladder was then looked for and found to be shrunken down. It was felt to contain one large smooth stone. The gall-bladder was dissected free from the liver down to the common duct, which was found to be much dilated. The gall-bladder was removed and the common duct opened. A catheter was passed into the duodenum and irrigation of the common duct both ways was undertaken with the result of washing out multiple sand-like stones. The bile at no time appeared to be purulent or thickened. The catheter was left *in situ* running up towards the liver. One cigarette wick was placed in the common duct and another in the wounded surface of the pancreas and one sponge left in to stop bleeding from some obscure source of hemorrhage between the duodenum and the pancreas.

PATHOLOGICAL REPORT

A small gall-bladder with thick walls and a smooth mucous surface containing a spherical brown stone about the size of a cherry pit. A microscopical examination shows epithelial hyperplasia of the mucous membrane with wandering-cell infiltration and fibrosis.

Chronic cholecystitis.
Cholelithiasis.

FURTHER DISCUSSION

The question of anesthetic was almost certainly discussed because there are several things brought out about the lungs. So they went over it very carefully and gas-ether was decided on, which makes us think that there was very little in the chest.

I was just going to emphasize the old law of Courvoisier that if this thing were carcinoma the gall-bladder ought to be enlarged, and with it shrunken as it is described it ought to be inflammatory with a stone in the background. Of course that may well have been the focus from which inflammation was carried to the pancreas with this trouble there.

The pathological report does not speak of those glands which were dissected out. They describe something as large as an orange, which is pretty big for anything in the pancreas. But so far it seems to me this is running true to form in that it is an inflammatory condition, and it seems to me that the pancreatitis secondary to the cholecystitis is perfectly consistent.

I think that twisted sponge was the wick which was loosened.

It says in the operation that the catheter was passed into the duodenum, so that it is hard to know just what they mean unless it is an edematous temporary closing of the common duct.

Did they use pig-bile instead of ox-bile?

MISS PAINTER: When they could get it.

DR. YOUNG: There is a great deal of question as to the value of ox-bile anyway. I think most of us feel that ox-bile fed by mouth in the quantities that are usually given is of very little if any use, and does have a considerable irritating effect. Dr. Hugh Williams feels that in cases where because of the absence of the normal bile content in the bowel or an upset liver secretion there is an actual change in the coagulation of the blood due to the effect on calcium content, large quantities of bile by mouth may be given to try to approximate the amount of bile necessary, and are of very great value. But those cases I think are not common, and I think in the average case as used it is of little value. What do you think, Dr. Davis?

DR. LINCOLN DAVIS: I agree with what you say about large quantities.

DR. YOUNG: In other words, if it is needed at all we have to use large quantities and it is very irritating. Have you seen much good from it, Dr. Lord, in the average small doses?

DR. FREDERICK T. LORD: I have not.

DR. YOUNG: On April 6 it sounds as though there was a leakage from the duodenum, but I do not see how that can be possible if the stools were clay-colored, showing that nothing went through that way.

He died twelve days after operation, and with the meagre description here given I have not a guess unless he has what we have learned to look for, and that is an overwhelming infection which because of the fact that it is postoperative has not given signs of its presence. Is anything more said about the presence of bile in the stools? We are given to understand that the liver is working normally.

MISS PAINTER: April 10 there were large amounts of bile in the stools.

DR. YOUNG: So that apparently everything was going along all right. I think all we can do is simply to guess at what killed him, and the only possible guess is an overwhelming infection.

DR. LORD: Is there any X-ray of the lung?

MISS PAINTER: No; no X-rays at all.

DR. YOUNG: Twelve days after operation seems too late to believe there was any lung condition due to the operation.

DR. LORD: He had a cough before operation. The sputum was said to be characteristic of bronchiectasis—I do not believe there is any sputum characteristic of bronchiectasis—and he coughed up three drams of bright red blood one week before admission. That is an intercurrent hemoptysis which does not have the same bearing on tuberculosis as hemoptysis out of a clear sky, but nevertheless one cannot neglect the importance of any hemoptysis as an indication of probable pulmonary disease.

DR. YOUNG: Do you think that can have any possible bearing on his death twelve days afterward with just this note about becoming "apathetic and stuporous?"

DR. LORD: I do not see the bearing, but I think it is a significant event anyhow.

DR. YOUNG: I do not see that we have any hint in the history or examination that will give us a lead on this.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic cholecystitis.
Cholelithiasis.
Operations, cholecystectomy, choledocostomy.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Cholecystitis.
Cholelithiasis.
Pancreatitis.
Peritonitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Colloid carcinoma of the duodenum involving the pancreas and the common bile duct.

Metastases in the liver and retroperitoneal glands.

2. *Secondary or terminal lesions*

Dilatation of the common and hepatic bile ducts and of the pancreatic duct.
Focal pneumonia, lower lobes of lungs.
Fibrinous pleuritis.
Edema of the lungs.
Obsolete tuberculosis of a bronchial lymph node.
Cirrhosis of the liver.
Chronic passive congestion of the spleen.

3. *Historical landmarks*

Chronic pleuritis.
Operation wounds.

DR. RICHARDSON: The head was not examined.

In the anterior abdominal wall there was a linear scar sixteen centimeters long, the central portion open over a length of about four centimeters, the suture marks still visible. The abdomen was not distended, rather hollow, the wall soft. The skin and mucous membranes were pale, the muscles thin, soft and pale.

There was no fluid in the peritoneal cavity. The appendix, esophagus and stomach were negative, the jejunum, ileum and large intestine negative. There was much slate-colored fecal material in rather large solid masses in the large intestine.

The mesenteric glands were negative, but the retroperitoneal glands in the region of the pancreas were considerably enlarged, up to two and a half centimeters, and showed pale grayish homogeneous surfaces like new-growth tissue.

The liver was five centimeters below the costal border. The diaphragm was at the fourth interspace on the right, at the fifth rib on the left.

In each pleural cavity there was a small amount of dirty reddish fluid and fibrin. The trachea and bronchi contained much dirty brownish-red mucopurulent material. The bronchial glands were enlarged, pigmented, soft, negative except one on the right side which showed fibrocalcareous degeneration,—obsolete tuberculosis. There was some chronic pleuritis, most extensive on the right. The lungs in the region of the lower lobes showed numerous areas of focal pneumonia.

The aorta and great branches showed only a slight to moderate amount of sclerosis. The circulatory apparatus elsewhere was negative.

The liver was slightly enlarged, showed some cirrhosis, and in two places just beneath the surface there were four small rather indefinitely outlined masses of new-growth-like tissue. The gall-bladder was wanting. The cystic duct was tied off. The hepatic duct was dilated to two centimeters, and the upper end of the common duct to two and a half centimeters. The mucosa of these ducts was negative. The end of the common duct was open and lost in a roughly circular, irregular, rather nodular fungous mass infiltrated with much dirty colloid-like material. From the lower portion of this mass the remaining portion of the common duct extended as usual to the duodenal papilla. The duct contained a little colloid-like material. Its mucosa was negative.

The pancreas in the region of the body and tail was rather short, small, and the tissue markings were lost. The section surfaces were pale yellowish-gray, leathery, homogeneous. The duct in the body and tail of the organ was dilated to 1½ cm. and contained much colloid-like material. The mucosa was smooth. The duct in the region of the head was lost in the fungous mass mentioned, which apparently involved this region of the pancreas. The cut surfaces of the pancreas in the region of the head were leathery, tough, and with little if any definite pancreatic tissue. The fungous mass showed irregular somewhat nodular upper and lower margins, and these were continuous with the soft central portion. This mass was 4 x 5 cm. and 2 to 3 cm. thick in the region of the wall of the duodenum and involved the posterior and some of the lateral wall with disintegration and disappearance of a portion of the common bile duct, approximately its middle third. The first portion of the duct of Wirsung was present but was soon lost in the region of the new growth.

The spleen was moderately enlarged, the tissue rather soft. The adrenals and kidneys were negative. A colloid carcinoma then of the duodenum with involvement of the pancreas and common bile duct and metastases in the liver and retroperitoneal glands.

DR. YOUNG: Did that block the common duct at the time you saw it?

DR. RICHARDSON: No.

DR. YOUNG: A catheter could have been put down the common duct at the time of operation?

DR. RICHARDSON: From the conditions present at necropsy, yes.

DR. YOUNG: Why should that block bile going into the duodenum before necropsy? Because he has had clay-colored stools and absence of bile apparently in the intestines. If a catheter could go through why shouldn't the bile go through?

DR. DAVIS: It states here that the duodenum showed bile, much pus and no blood.

DR. RICHARDSON: The stools were slate-colored at the time of necropsy.

DR. YOUNG: He had two things, and he should not have. We got one of them.

DR. LORD: Was there any bronchiectasis?

DR. RICHARDSON: No.

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COMPETITIVE MEDICINE

The Journal has repeatedly emphasized the belief that the medical practice of the future will be along preventive lines. The care of the sick has in the past been the rôle of the practitioner; the preservation of health will be his duty of the future if he is to continue a practice which will be of satisfaction to himself and of service to the public. Efforts in the direction of public health are gradually achieving success. The layman is beginning to appreciate the fact that many diseases are preventable and he is beginning to demand effective preventive rather than ineffective curative service. Better knowledge of the nature of disease and health, derived largely from the more enterprising members of the profession itself, is bringing about this demand for improved, effective medical attention.

The young physician who believes that his life work will consist in a daily round of house to house visits, watching the course of typhoid fever, of pneumonia and of inoperable cancer, is making a grave mistake. If he is to keep abreast of the times and enjoy a practice that will be considered successful his duties will consist of vaccinations and inoculations, periodic health examinations and advice as to hygiene, diet and the maintenance of health. There will still be minor ailments and serious illnesses for him to care for, but in the main his duties will be to prevent rather than to care for these catastrophes.

The inherent conservatism of the medical profession has so far been its greatest barrier to the fullest acceptance of these modern duties. In many instances the fault lies with the physician himself who can brook no changes from the existing order of things. For all, however, the change will be difficult because as individuals they cannot immediately take over many of the functions that have come to be associated with public health departments, hospitals, and examining institutions.

Herein lies the unfairness of the competitive element, for institutions can advertise their services and the private practitioner cannot, and retain the respect of his associates. Health publicity campaigns may be inaugurated by hospitals, through which the hospitals themselves gain a fair degree of renown, and examining institutes may frankly advertise. It is only departments of public health that honestly urge the coöperation of the private physician and look to him for a contiunance of their services. They alone have no axes to grind.

Preventive medicine cannot be made to reach all classes of society without the enlistment of the family physician, and if preventive medicine is to become a powerful factor in our health programs of the future his interests must be safeguarded. The modern hospital is a necessary institution, but so is the practitioner, and if one can advertise and the other cannot they are entering into an unfair and dangerous competition, as unfair and as dangerous as is the usurpation of the duties of the physician by lay organizations. If these practices are to continue the only recourse of the physician will be to advertise his own services, vehemently, but ethically, as groups and not as individuals. This may well become one of the duties of our state societies.

HEALTH INSURANCE

How to bring adequate medical service within the means of the average family is the outstanding problem in Medicine today. It is a problem which, if it be not answered by the medical profession, may well be taken over by the laity for solution.

To the man of moderate means an illness necessitating expert care and hospitalization is a financial calamity, comparable to the destruction of his home by fire. Of our city population roughly twenty per cent. are suitable to receive medical charity at hospitals or dispensaries; about another twenty per cent. can afford to pay the high cost of modern private medical care. This combined forty per cent. potentially receives adequate medical attention. Of the remaining sixty per cent. a small minority don

their oldest clothes and invade the Out-Patient Departments, to the exasperation of both Hospital and private physician; another group receives quite as definite charity, though the patient may often not recognize it as such, in the private office of the competent physician; members of still another group pay a dollar an office visit, receiving a dollar's worth of service which is generally inadequate; others attracted by promises and low prices play with the fire of Chiropractic or Eclecticism. It has been estimated that good medical service is not secured by over one-half of our citizens.

Almost overnight, on the other hand, there has grown up a public consciousness of the desirability and possibility of improving Health. Instructed first by the physician, the public has of late outstripped its teacher. Its servants, members of the Public Health Service, often find themselves handicapped by the very race which produced them—their brethren in practice. As regards personal preventive medicine, individuals and corporations are perforce turning for help, not to the medical profession, but to business organizations such as the Life Extension Institute, which (whatever our grave criticism of its methods) is nevertheless delivering a type of service legitimately demanded by the public, and heretofore not furnished by the doctor. Once more the public has been a step ahead of the Profession.

To those in touch with conditions in the United States it is evident that an attempt at some type of State Insurance is not far distant. A bill has been repeatedly introduced into the Massachusetts Legislature, looking toward the socialization of Medicine. Before the war in several States health insurance was under serious consideration. Government Health Insurance, moreover, is in operation in England, Germany, Belgium and other continental countries. In England after eleven years of trial and error, a system of insurance has been evolved comparatively satisfactory to both physician and workingman. Costs are shared by employer, employee and State. The patient is now free, within certain limits, to chose his own physician. As a result, the workingman in England today is said to be receiving better medical attention, and the physician greater financial rewards for his services to this Class, than before the Insurance Act. The Profession, moreover, after a first stubborn resistance, has apparently accepted the new regime, and now even voices its approval.

The Journal has always held State Medicine to be undesirable, on the grounds that the only possible group capable of supervising the *quality* of medical service is the medical profession. Once the state controls, while service may be rendered at low cost and in sufficient quantity, the quality of such service would be questioned.

Exhortation against State Medicine, however, is not sufficient. The swing toward the socialization of all types of health service is strong and can be offset only by an alternative, not only proposed, but actually put into practice by the profession. We must prove to the public that, outside of State Medicine, a plan can be devised by which adequate medical attention shall be supplied to the community at reasonable cost.

Can the Profession at present offer as a substitue to State Medicine any plan which might stand a chance of success? Without experiment along other lines, what justification have the doctors for opposing the undertaking of Health Insurance by the state?

We believe that an attempt must be made to answer the following questions:

1. Can adequate medical service be supplied to the community at reasonable cost, unless the cost be divided? Must we not, in other words, postulate insurance of some type?

2. If insurance other than by the state, by whom shall it be issued, by the State Medical Society, groups of large hospitals, one large hospital, or by small groups of men in private practice? Experiment only can solve this problem. Could a small group of men with proper financial support and with the backing of our State Medical Society try out group insurance on a small scale, determine the costs per capita, the hospital facilities and the size of staff necessary to serve a given number in the community? A successful experiment would show the way to larger attempts upon the same or other lines. The great advantage would be that the control of such an experiment would be in the hands of the profession rather than of the laity. The salvation of the public and the profession from some form of State Medicine must be a medically supervised substitute.

MALARIA IN THE NEAR EAST

THE Committee on Malaria of the International Near East Association presented last month at the annual meeting in Stockholm, the report of its preliminary survey.

In Greece, Asia Minor, Syria, Palestine and the Caucasus, malaria has become a veritable scourge, the annual loss of time among the working classes having been estimated as amounting to at least 75,000,000 working days per year, indicating a net economic loss of at least $75,000,000 annually. Some of the richest agricultural lands in the world, such as the valley of the Meander, the home of the Smyrna fig, are practically lost to industry. Since the war, malaria, formerly endemic in the Near East, has become malignant and epidemic, among the important causes, particularly in Greece, being the land of forests and the torrential rains of March and April which convert the plains into extensive marshes. There, with the temperature rising to 105° in August, is a perfect breeding place for the anopheles. Since the cessation of hostilities the hardy and malaria-free moun-

taineers have moved into the valleys and fallen victims to the disease.

With the great influx of refugees into Greece, since 1912, the situation is now worse than it has ever been, one third of the entire population of Greece being infected, and more than one half of all the inhabitants of Macedonia and Thrace.

Poor housing and poor nutrition—the factor of individual resistance to the disease—is being stressed by the committees as one of the important ones conducing to its spread. First consideration, the committee believes, should be given to improving the health of the human subject of the disease and to undertaking sanitary operations against the mosquito.

Already, in 1924, the Greek government, with the coöperation of the Near East Relief, had organized one hundred malaria fighting units to go into the malarial districts, treat the subjects of the disease, and drain the stagnant water of the country. The work of these units has been fairly successful.

One factor is stressed—the importance of quinine of which the world supply is wofully inadequate. In Greece alone it has been estimated that forty tons a year is needed to deal adequately with malaria.

THE CARE OF THE PATIENT

THE Harvard Medical School continuing in the remarkable progress it has made will offer next October a course of six lectures, open to the public, which will make explicit, what has long been implicit, in modern medical teaching. The Title of this Course is, The Care of the Patient.

President Emeritus Eliot is very interested in this forward-looking move in medical teaching and endorses it unreservedly. He had hoped and expected to make some remarks inaugurating the Course but has been unavoidably prevented. Dr. Edsall will give the opening lecture on October 6th.

The second lecture will be by Dr. Franklin G. Balch, October 8th; the third by Dr. Alfred Worcester, October 13th; the fourth by Dr. Francis W. Peabody, October 15th; the fifth by Dr. Edward W. Taylor, October 20th; the sixth by Dr. C. Macfie Campbell, October 22d. The lectures will be given at the Harvard Medical School, Longwood.

The significance of this step is seen when it is realized that the men who are to lecture on the common topic of the personal care of the patient, are each one leaders because they have a breadth and depth of view that covers, more or less, the whole field of Medicine. This means that they see the vast importance of treating the patient as a whole, as a person, a human being, not *merely* as a machine; nor as a mere laboratory object; and seeing the great importance of this attitude of mind they give their influence to support those students and perhaps practitioners, who, while they feel some of the importance of the personality of their patients are uncertain as to its real and far-reaching significance because they are so impressed with the marvelous advances made recently by scientific laboratory research, which, for the time being at any rate, seemingly totally ignores the patient as an individual with a unique personality and perhaps highly peculiar relation of mind and body.

Such a course as this must necessarily clarify the more or less confused minds of immature students, and even doctors of medicine, who have been overwhelmed by daily practice or laboratory technique.

Men of eminence are such simply because they have reached an altitude from which they can take a wide view of the whole situation; and we are ready to accept their guidance because we know they never could have reached the place they have if they had not been fundamentally sound scientifically and spiritually.

Between the two logical limits of pure spirit and pure body a person gets along as best he can. In our opinion a person is both body and spirit, or as one eminent physician said, is a spirit and has a body. Therefore, when he falls ill, whether from physical or spiritual causes, and calls in a physician, he should receive treatment broad enough, deep enough, and high enough, to include both points of view. It is the province of medicine, therefore, to dignify and support and teach the view that emphasizes and respects the personal side of the patient. This course of lectures seeks to encourage that conception of medical practice.

But not only from the point of view of practice and medical treatment, is the respect for personality important; also, from the point of view of science, it is perhaps even more important. Only when the personality and spirit of the patient is sufficiently respected do we get an approximately adequate scientific insight into disease. Disease does not exist in abstract. It is a condition of individuals, sometimes persons; and we are deeply dependent on what the patient tells us in gaining an adequate insight into his condition. A patient will often not tell us, indeed he will find it impossible sometimes to tell us, because of his own inner perturbations of spirit, all we wish to know, if we fail to treat him with adequate personal respect. The same principle holds equally true of any scientific research: we must treat the object studied with adequate care and respect for its peculiar individual characteristics or else our experiments will ignominously fail to give us the knowledge we are seeking. If this is true of chemical and physical science, and it is true, how much more

is it true when the subject of our investigation is a person?

Obviously the purpose of these lectures is to bring authoritatively to general consciousness what has always been known and acted on by the great physicians of history. We commend most briefly, therefore, to all students, to doctors, and to others interested, this course on The Care of the Patient, to be given by such eminent men.

THIS WEEK'S ISSUE

Contains articles by the following named writers:

CAMPBELL, C. MACFIE, M.A., B.Sc., M.D., F. R. C. P., Edin.; Professor of Psychiatry, Harvard Medical School; Director, Boston Psycopathic Hospital. His subject is "Psyshotherapy."

BARNEY, J. DELLINGER, A.B., M.D., Harvard; F. A. C. S.; Chief of Service, Urological Department, Massachusetts General Hospital; Assistant Professor of Genito Urinary Surgery, Harvard Medical School. He is associated in the preparation of this paper with

JONES, STEPHEN GEORGE, A.B., M.D., Harvard; F. A. C. S.; Assistant in Surgery, Outpatient Department, Massachusetts General Hospital; and Resident Surgeon, Collis P. Huntington Hospital. The subject of their paper is "The Frequency of Bilateral Renal Tuberculosis."

WHITTEMORE, WYMAN, S.B., M.D., Harvard; F. A. C. S.; Assistant Visiting Surgeon, Massachusetts General Hospital; Visiting Surgeon, Beth Israel Hospital. His subject is "Thoracoplasty in Advanced Pulmonary Tuberculosis."

COLLER, FREDERICK A., B.S., M.S., M.D., F. A. C. S.; Associate Professor of Surgery, University of Michigan; Surgeon to the University Hospital. His subject is "The Inevitable Damage Consequent Upon Goiter."

CUTLER, GEORGE D., B.Sc., M.D., Harvard; F. A. C. S.; Assistant Surgeon, Children's and Boston Floating Hospital; and

MERRIAM, JOSEPH C., M.D., Harvard; Assistant at the Children's Hospital. They write on "Intestinal Obstruction in An Infant Due to Mesenteric Cyst with Volvulus."

WITHINGTON, PAUL R., M.D., Harvard; Chairman, Milton Board of Health; Visiting Physician, Milton Hospital; and

BIGELOW, GEORGE H., M.D., Doctor of P. H., Harvard; Director of Communicable Diseases, Massachusetts Department of Public Health. They write on "The Milton Experience with Anti-rabies Inoculation of Dogs."

O'NEILL, OWEN, M.D., Jefferson; Surgeon in Chief, St. Joseph's Hospital, Willimantic, Conn., and

OTTENHEIMER, EDWARD, B.S., M.D., University of Virginia; Assistant Surgeon, St. Joseph's Hospital. They write on "Weil's Disease."

BRYANT, JOHN, A.B., M.D., Harvard; Formerly Director, Convalescent Department Walter Reed General Hospital; and Field Consultant, Department of Physical Reconstruction, Surgeon-General's Office; Corresponding Consultant, Burke Foundation for Convalescents. His article is continued from the previous issue under the title "Convalecsence VIII: Notes on Convalescent Work in the U. S. Army."

COLORADO SPRINGS AND THE INDIGENT TUBERCULOUS

REGARDLESS of the criticism that has been leveled at us, and of our reputation of being a rich man's town, we have always with us—and apparently in increasing numbers—the needy who have come to seek health. A report on the "Indigent Migratory Consumptive in Certain Cities of the Southwest," by Jessamine S. Whitney, statistician of the National Tuberculosis Association, is of interest in this connection. In regard to Colorado Springs her figures cover the period from April 1, 1919, to April 1, 1920. During this period there were reported to the health office 370 cases of tuberculosis, and there were found 285 cases which had not been registered, making the known cases for that year 655, of which 59% were indigent. Commenting on the significance of these figures, Miss Whitney says, "The 1920 census figures gave Colorado Springs a population of approximately 30,000. With a total of 655 known cases in a year, there is one case of tuberculosis to every 46 of the population, and one indigent consumptive to every 78 residents. The burden laid upon a community by such a situation is a heavy one."—*Excerpt from Bulletin of the National Tuberculosis Association.*

The Massachusetts Medical Society

MEMBERSHIP CHANGES

Dr. Frank S. Cruickshank has moved his office from Beacon Street, Boston, to 23 Bay State Road, in that city.

Dr. Harry Fein has opened an office at 491 Commonwealth Avenue, Boston.

Dr. Charles J. Kickham has moved his office from 536 Commonwealth Avenue, Boston, to 524 on the same avenue.

Dr. James C. Janney has removed his office to 252 Marlborough Street, Boston, Mass.

RECENT DEATH

POWELL—DR. JONATHAN RIDER POWELL, of Cambridge, died at his home in that city, September 8, 1925, at the age of 51.

He was born in Old Chatham, N. Y., attended the Friends' Seminary in New York City, and was graduated from Union College, Schenectady, N. Y., in the class of 1884. He received the degree of M.D. from the University of Vermont in 1888. He was a member of the Psi Upsilon fraternity and of the Delta Mu Society while in the medical college. He is survived

by his wife, Lalia Bent Powell; a daughter and two sons.

CORRESPONDENCE

BOSTON CHAMBER OF COMMERCE

Editor, Boston Medical and Surgical Journal:

It occurred to me that the readers of the JOURNAL might be interested in the personnel of the Chamber's Committee on Public Health and Sanitation for the Chamber year 1925-26. It is just being announced in *Current Affairs*.

The members are:

Dr. Alexander S. Begg, *Chairman*, Dean, Boston University School of Medicine, 80 East Concord Street.

Frank A. Barbour, 1120 Tremont Building.

S. Bruce Black, President, Liberty Mutual Insurance Company, Park Square Building.

Dr. Frederick J. Cotton, 520 Commonwealth Avenue.

Dr. Francis P. Emerson, 520 Commonwealth Avenue.

H. P. Hood, 2nd, H. P. Hood & Sons Company, 292 Rutherford Avenue, Charlestown.

Dr. Roger I. Lee, 270 Commonwealth Avenue.

Dr. George Cheever Shattuck, 520 Commonwealth Avenue.

Isaac H. Sprague, Harris Forbes Company, 24 Federal Street.

Yours very truly,
ELLERTON J. BREHAUT,
Manager, Civic Bureau.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING SEPTEMBER 5, 1925

Anterior poliomyelitis	10	Ophthalmia neonatorum	24
Chickenpox	5	Pneumonia, lobar	27
Diphtheria	39	Scarlet fever	39
Dog-bite requiring anti-rabic treatment	4	Septic sore throat	2
Encephalitis lethargica	4	Syphilis	32
Epidemic cerebrospinal meningitis	2	Suppurative conjunctivitis	13
German measles	6	Tetanus	2
Gonorrhea	96	Tuberculosis, pulmonary	110
Influenza	2	Tuberculosis, other forms	9
Measles	36	Typhoid fever	19
Mumps	4	Whooping cough	131

RHODE ISLAND STATE BOARD OF HEALTH

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING AUGUST 1, 1925

Diphtheria	5	Typhoid fever	3
Poliomyelitis	2	Scarlet fever	1
Whooping cough	1	Measles	20
Smallpox	2		

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING AUGUST 8, 1925

Diphtheria	4	Poliomyelitis	2
Whooping cough	3	Measles	4
Typhoid fever	3	German measles	2
Scarlet fever	4	Rubella	1

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING AUGUST 15, 1925

Diphtheria	4	German measles	1
Measles	8	Scarlet fever	1
Whooping cough	2	Poliomyelitis	1
Chickenpox	1	Typhoid fever	8

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING AUGUST 22, 1925

Diphtheria	5	Scarlet fever	5
Smallpox	1	Ophthalmia neonatorum	1
Measles	10	Whooping cough	2
Poliomyelitis	7		
Typhoid fever	5		

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING AUGUST 29, 1925

Diphtheria	15	Encephalitis epid.	1
Last week	11	German measles	1
Diphtheria bacilli carriers	5	Influenza	1
Typhoid fever	13	Mumps	1
Last week	7	Paratyphoid fever	2
Scarlet fever	16	Pneumonia, broncho	11
Last week	12	Pneumonia, lobar	12
Measles	2	Poliomyelitis	7
Last week	12	Trachoma	1
Whooping cough	99	Tuberculosis, pulmonary	36
Last week	75	Tuberculosis, other forms	2
Cerebrospinal meningitis	1	Gonorrhea	21
Chickenpox	2	Syphilis	18

NEWS ITEMS

J. E. BARNARD LECTURES BEFORE THE SECTION OF PHYSIOLOGY — At the meeting of the British Association for the Advancement of Science just held at Southampton, Mr. J. E. Barnard, who has become noted by reason of association with Dr. Gye in the study of cancer, delivered a lecture on "The Microscopic Observation of Small Bodies" before the Section of Physiology.

Although not a physician, Mr. Barnard's avocation is the development of the microscope. Dr. Vernon Kellogg, Professor Yandell Henderson and Professor W. F. G. Swann of the United States were in attendance at these sessions.

WOMEN ADMITTED TO THE ROYAL COLLEGE OF SURGEONS — Although previously admitted as fellows and members of the Royal College, women were not given the right to vote for the Council. Recently the right to become full members has been conferred on women. Only thirteen women have been fellows and members.

REPORTS AND NOTICES OF MEETINGS

ANNUAL MEETING OF THE AMERICAN ROENTGEN RAY SOCIETY

THE twenty-sixth annual meeting will be held at the Mayflower Hotel, Washington, D. C., September 22-25, 1925. Physicians are cordially invited to attend.

THE DIAMOND JUBILEE OF THE MEDICAL SOCIETY OF PENNSYLVANIA

THE seventy-fifth annual session of this society will be held October 5, 6, 7, 8, 1925 in Philadelphia. The first day will be given over to conferences and social occasions. On Tuesday October 6, Dr. J. G. Shoemaker of Reading will deliver President's Address, to be followed by Dr. W. D. Halgard, President of the Ameri-

can Medical Association. The scientific work will be divided among sections in Medicine, Surgery, Pediatrics, Dermatology, Eye, Ear, Nose and Throat and General Medicine. In planning the program post-graduate instruction for the general practitioner was the central purpose.

INVITATION

The officers and members of the Medical Society of the State of Pennsylvania invite all physicians, resident or non-resident, who are eligible for membership in a county medical society, to attend the scientific sessions of their Seventy-Fifth Annual Meeting.

UNITED STATES CIVIL SERVICE EXAMINATION

The United States Civil Service Commission announces the following open competitive examination:

TRAINED NURSE (PSYCHIATRIC)

Receipt of applications for trained nurse (psychiatric) will close October 10, 1925. The date for the assembling of competitors will be stated on the admission cards sent applicants after the close of receipts of applications.

The examination is to fill vacancies in the Panama Canal Service. The entrance salary for female nurses (psychiatric) is $135 a month, with promotion at the end of each year of service of $5 a month until a maximum of $150 a month is reached. The entrance salary for male nurses (psychiatric) is $140 a month, with promotion at the end of each year of service of $5 a month until a maximum of $155 a month is reached.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil-service examiners at the postoffice or customhouse in any city.

AMERICAN COLLEGE OF RADIOLOGY AND PHYSIOTHERAPY

THE annual meeting will be held October 19, 20, 21, 22, 1925 in Chicago at the Hotel LaSalle. Physicians are cordially invited. Special railroad rates.

The officers are:

Curran Pope, M.D., Louisville, President.

John Stanley Coulter, M.D., Chicago, President Elect.

Harry Eaton Stewart, MD., New Haven, First Vice President.

W. Scott Keyting, M.D., Salt Lake City, Second Vice President.

Disraeli Kobak, M.D., Chicago, Third Vice President.

Warren B. Chapman, M.D., Carthage, Fourth Vice President.

Edwin C. Henry, M.D., Omaha, Treasurer.

Roy W. Fouts, M.D., Omaha, Secretary.

In addition to clinics addresses will be delivered by Curran Pope, M.D., Louisville, Ky.; Ira O. Denman, M.D., Toledo, Ohio; C. W. Hanford, M.D., Chicago, Ill.; J. R. Ranson, M.D., Denver, Colo.; Roland G. Breuer, M.D., Norton, Kans.; Edgar Mayer, M.D., Saranac Lake, N. Y.; Roy A. Barlow, M.D., Madison, Wis.; Charles E. Stewart, M.D., Battle Creek, Mich.; J. C. Elsom, Madison, Wis.; W. T. Bovie, Ph.D., Boston; Damon Brown, M.D., Madison, Wis.; B. H. Hager, M.D., Madison, Wis.; Gustave Kolischer, M.D, Chicago; B. C. Corbus, M.D., Chicago; William Allen Pusey, M.D., Chicago; M. H. Cottle, M.D., Chicago; A. David Willmoth, M.D., Louisville, Ky.; Maurice Fishbein, M.D., Chicago; D. J. Davis, M.D., Chicago; W. B. Chapman, M.D., Carthage, Mo.; F. B. Granger, M.D., Boston; Disraeli Kobak, M.D, Chicago; Wm. L. Clark, M.D., and H. H. Bass, M.D., Philadelphia, Pa.; and Maxmilian Kern, M.D., Chicago.

SOCIETY MEETINGS

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

Wednesday, January 6, 1926—The semi-annual meeting at Haverhill.

Wednesday, May 5, 1926—The annual meeting at Lawrence.

NEW ENGLAND STATE MEDICAL SOCIETIES

The annual meetings of the New England State Medical Societies are scheduled as follows:

Vermont State Medical Society—St. Johnsbury, Oct. 15-16, 1925.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEW

Diseases of Children for Nurses. New (fifth) Edition. Including Pediatric Nursing, Infant Feeding, Therapeutic Measures Employed in Childhood, Treatment for Emergencies, Prophylaxis and Hygiene. By ROBERT S. MCCOMBS, M.D., Associate in Medicine at the Philadelphia Polyclinic; Instructor of Nurses at the Children's Hospital of Philadelphia. Fifth Edition, Thoroughly Revised. Octavo of 581 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1925. Cloth, $2.75 net.

This is a very complete miniature text book of pediatrics, perhaps as valuable for the general practitioner who wishes quickly to review a given subject, as for the nurse, for whom it is almost too elaborate.

Some details we might not agree with, such as the two hour feeding interval for normal babies and the direction to draw blood in vaccination. Rickets is given an inadequate amount of space, and the value of codliver oil as a specific agent in prevention and treatment is not mentioned.

In this particular the desirability of breast feeding is over-estimated; we now know that it has very little protective value against rickets.